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SOME COMPLICATIONS IN NUTRITION RESEARCH[1]

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IT IS relatively easy to make acute experiments. It is relatively easy to produce acute deficiencies of vitamins, salts, proteins, etc., but the big things before us—experiments that are yet in the making—concern the chronic effects of small deficiencies, which include not only the ordinary elements of diet but the various ingredients that are added to or eliminated from our foods by the conditions of our civilization, by the conditions of our agriculture, by the conditions of our food industries. Many years ago, so far back that most of you will not remember it at all, I was interested in an experiment which then was considered both extensive as to time and conclusive as to findings; namely, the experiments with saccharin on a number of healthy adults, lasting nine months. What can be proved by an experiment on a few healthy adults lasting nine months? Only that saccharin in the quantities and for the time taken is not acutely toxic to the healthy adult man. Society is not made up of healthy adults, and nine months is a very short time in the life of man, especially now when the average life span is well over fifty years. This is not a very cheerful situation for the investigator, because how can we assign to our graduate students who stay with us usually one to four years, research problems that involve five to ten or more years? How can our institutions finance research programs of such scope?

Nevertheless, some of the large problems of nutrition are of that type. When we fail to see any ill effects after three to six months or a year, even the best of us frequently conclude that no bad effects are produced, without considering time, individual powers of repairs, and the probable inadequacy of the criteria of injury.

My illustrations this evening will concern some phases of fruits and vegetables and the problems that are related to them. Certainly nothing needs to be said here as to the high value of fruits and vegetables, with their vitamins, salts, and bulk. Within certain limits, the more fruits and vegetables in our diet, the better for the individual and the race. But fruits and vegetables should, so to speak, come to our table with clean hands.

In our country at the present time it

[1] An address before the 21st Annual Meeting of the American Dietetic Association, Milwaukee, Wisconsin, October 10, 1938.

is almost impossible to raise fruits on a commercial scale in competition with insects without use of sprays toxic to insects, as well as man. The problem therefore becomes at once biologic, and medical, as well as economic. It will not help to rant and say that the government should wholly abolish old standards and establish standards eliminating all foreign materials, such as poisons on the fruit. That probably today would destroy the fruit industry, and you and I certainly would not like to see our tables free from fruits and vegetables. Possibly other substances less toxic to man could be found. What is the present situation here? Of course, universities, state agricultural colleges and the federal government have been searching for years for substances efficacious against insects and economically feasible but less injurious to man than is lead, arsenic, and fluorine. These compounds are apparently the most effective against insects feeding on fruits but they also offer the greatest danger to the health of man. Not in acute lead poisoning, not in acute arsenic poisoning, not in acute fluorine poisoning, but this constant intake of a little, possibly every day over a lifetime. What effect does that have on the health, the efficiency, the longevity of man? That is the big problem before us. I may say that even the ablest physician can not, in this country today nor in any other country today, with certainty diagnose the incipient injury of lead, arsenic or fluorine in the human body. It is a question of small things, time and lack of adequate criteria. When normal at the start, some of our organs can be damaged very much, indeed, before we show either acute or chronic illness.

Years ago a group of scientists advised our federal Department of Agriculture (Food and Drug Administration) to undertake such a study. It is almost too expensive and extensive in time to be undertaken by any private institution. Finally, a study of the problem was started by our government in the Department of Agriculture at Washington three years ago, particularly on lead and arsenic sprays.

At the request of the Secretary of Agriculture, a committee was appointed by the National Academy of Sciences to advise the Department of Agriculture on the research personnel, as well as on the plan and the scope of the research project. I think the investigators engaged were capable of undertaking the experiment. In the minds of some of us, conclusive data could probably be obtained on this difficult problem only after at least five years of work. Some of the best nutritionists, like Sherman, and some of the best pathologists, like Hektoen, were on this committee. A year ago Congress by law forbade the continuation of that experiment after it had run for three years. How many of you know about that? Personally I feel very badly about it. I feel restive that this can happen in our democracy. It was a promising experiment, touching the health of the whole country, as well as a large and important industry of the country. The problem was then turned over to the U. S. Public Health Service. I felt rather pleased about that, because I have confidence in our Public Health Service just as I have confidence in the scientific work of the Department of Agriculture. You may imagine my consternation, therefore, when less than a week ago I received a copy of an official

document released by the Secretary of Agriculture on September 19, 1938, less than a year after the work was taken over by the Public Health Service, in which the Secretary of Agriculture now raises the allowance of lead on all fruits and vegetables 50 per cent, a conclusion supposedly based on investigations of the Public Health Service. The Public Health Service took over this work less than a year ago and the letter on which Secretary Wallace bases his decision was dated June 25, 1938.

I do not know the details of this work; all of it has not been published, but I am old enough to know that, short of a miracle, they could not get a conclusive answer to this problem even if twice this length of time had elapsed. They might have been unable to find injurious effects, but were criteria and time adequate? Feeding lead arsenate daily for ten days to a few healthy adults scarcely seems adequate, nor does lead and arsenic determination of the blood and urine of workers in orchards, even when coupled with the usual medical examination, when we do not know the quantity and duration of the lead arsenate ingestion. Some of these workers actually showed incipient lead poisoning. That is not the point. We must be sure that lead and arsenic produce no injury antecedent to frank and easily recognizable poisoning. The usual medical examination for health can not tell us that. In recent studies at the University of Wisconsin with small amounts of fluorine given daily to cattle, some adverse effects first made their appearance only after two years of such treatment.

The failure to find clear evidence of injury is often construed as positive finding that no injury is present. The history of medicine and biology gives innumerable examples of this. The failure to find effects may be due to our not knowing what to look for. Lead is cumulative; arsenic is cumulative. It is relatively easy to diagnose the frank symptoms of both. But what smaller amounts do to the various processes in the tissues of man and animals is not known.

May I make this point clear? All of you know that a healthy individual can lose half his kidney substance without any evidence of impaired physiology. He can lose half the thyroid gland, half the adrenals, half the liver; he can lose the greater part of the stomach without showing any nutritional defect whatsoever. These "factors of safety" are familiar to all of you. I mention this to point out that if you use certain functional tests, you may fail to get evidence of initial injury because of these factors of safety in the organs, where defects do not show until great injury has been produced. All the organs and all the functions, including longevity and reproductive capacity, must be included where we are dealing with substances which in themselves are toxic and where these substances are to be consumed by man, possibly daily and for years and years. These are serious complications in nutrition research. This type of work has scarcely been approached in this country.

There is another phase of the subject I would like to discuss with you very briefly; namely, fluorine-containing fruit sprays. Together with others, I have had to give some attention to this during the past year. The fluorine problem is even more complex than that of lead and arsenic. The present federal allowance of fluorine on fruits and vegetables

is 1.4 part per one million. Now, as much as that and in some cases more than that much fluorine is present in some waters used for drinking and cooking. This being so, is it safe to allow this, or more on our fruits?

Is it economically possible to raise fruits and vegetables in the various parts of the United States by aid of these sprays and after spraying wash away the poison without spoiling the fruits and vegetables? That is one of the problems. I am the son of a farmer. I have lived and labored on farms. I know something of the farmer's tribulations. I am reliably informed that provided not too much oil or other binder is used, washing of the fruit to meet the present lead, arsenic and fluorine allowance does not injure the fruit. This seems simple enough. But recently the problem of "mottled teeth" (enamel injury) has come to the fore in this country. Mottled teeth are due to ingestion of fluorine. One part in a million or 1.2 parts or 1.5 parts or certainly 2 parts per million of fluorine (in the drinking water) produces injury to the enamel of the teeth in man. In large areas of our country this condition prevails. Not every county or state has been adequately surveyed either for fluorine in the drinking water or for the extent of mottled teeth, but we have reliable information from many states. Many drinking waters contain fluorine but not up to this danger point. We have no data on fluorine-bearing waters in one of the southeastern states, but a survey of the extent of mottled teeth in the school children has been made. I quote: "In the five districts combined, 705 schools were surveyed; 235,697 school children were examined (presumably by competent dentists). Of this number, 7992 had mottled teeth." In many parts of the country mottled teeth are present in a very high percentage and we have data showing a high content of fluorine in the drinking water of those areas. This is not a matter of isolated communities. It extends over wide areas and it appears to depend upon the stratum from which the drinking water comes. In many of these districts the drinking water comes from deep wells. In other regions the fluorine-containing rocks are near the surface of the earth.

Are mottled teeth the only injury to the human body from small amounts of fluorine? We do not know. A higher amount of fluorine chronically ingested has been shown by one investigator at least to be capable of injuring every tissue in the body, causing invalidism and death, but what the smaller amounts do we do not know. If it is merely injury to the teeth of the growing child, that may not be so serious. We can manage without our normal teeth. If it is injury to the liver, kidneys, brain, thyroid, or other tissues that is more serious. The smaller the injury the more difficult it is going to be to detect it.

Now, of course, drinking water is not the only source of fluorine. In view of high fluorine-bearing domestic waters in large areas in the United States should we not be particularly concerned about added fluorine on fruits and vegetables, provided these can be raised without fluorine sprays? It should be stated here that, so far as our present information goes, the fluorine in natural foods and the fluorine in the form of spray is less poisonous than the fluorine in the drinking water, but how much less poisonous we do not know.

And here arises another difficulty. Most evidence indicates that experiments with fluorine on rats are not reliable as information regarding tolerance in man. Man may be about 20 times more sensitive than the rat, and according to some work at the University of Wisconsin, cattle seem to be more sensitive to fluorine than is the rat, when fluorine is ingested every day for years. So far as I know we have as yet no economically feasible way of removing fluorine from large bodies of drinking water.

And here is another difficulty. The vegetation grown on fluorine-rich soils appears to absorb considerable fluorine. Hence the fluorine in the soil sooner or later gets into our foods and drinking water. Now it is no news to you that our soil is being depleted by erosion and by constant production of crops. It so happens that rock phosphate is a relatively inexpensive and accessible fertilizer for a soil depleted in phosphate. Many of the soils need phosphates. These phosphate rocks contain a good deal of fluorine. What is going to be the condition 25, 50 or 100 years hence on our farms if we continue with fluorine-bearing rock phosphate fertilizer, and continue with lead, arsenic and fluorine sprays? We should start a long range investigation now, before we seriously damage our soil, and unwittingly add these poisons to our diets in water, grains, and fruits.

These are some of the complications of research in nutrition involving long time, large funds, and above all, new criteria of incipient injury by daily ingestion of small quantities of such elements as lead, arsenic, and fluorine. When leadership in research on these problems develops under public support, we must see to it that it is not frustrated by group myopia engendered by hope of temporary gain.

This discussion implies no unfriendly criticism either of colleagues, industry, or federal agencies. It is a plea for better thinking, better research, and better statesmanship on a problem of serious concern to society.

THE VITAMIN B COMPLEX IN PRACTICAL NUTRITION[1]

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ON SEVERAL occasions I have stated that it is difficult for a laboratory worker to make suggestions to those dealing with practical nutrition, and I imagine there is no group more willing to agree with this statement than the members of the American Dietetic Association. The modern dietitian must be interested in and does follow quite closely the newer findings in the laboratory, nevertheless it is obvious that dietetics is a science unto itself. The experimentalist is interested in obtaining new fundamental facts, the practical nutrition worker must continue to deal with dietary problems as they arise; often there is a wide gap between the two fields of endeavor. The rapid rate at which new work is being published is not simplifying the problem. It takes the least effort for the laboratory worker to describe his results with as little application as possible, often that is about all most of us can do.

The so-called vitamin B complex is probably giving the dietitian as much trouble as any one phase of nutrition. It is impossible at this time to give final conclusions about the practical application of our knowledge of the B complex, but we can at least consider together some of the problems which must be dealt with if we are to enjoy any degree of progress.

May I mention some of the most obvious problems and then discuss briefly how they relate to the individual factors in the B complex.

1. The demonstration of the existence of a new vitamin increases the difficulties encountered by the dietitian out of all proportion to the mere recognition of another nutrient. It becomes necessary to differentiate the effect of the new factor from that of the remainder of the complex. We have then the question of nomenclature and it takes time before there is general agreement on what terms to use. The new factor may be given undue emphasis when the dietitian knows that it can only prevent a specific deficiency and that a diet is valuable only when all vitamins, both known and unknown, are included in proper amounts.

2. The lack of available and accurate figures for the distribution of certain vitamins is a most perplexing problem. Most of you will agree that there are many erroneous values in the literature. A long and detailed account of a modified and improved method for the assay of a certain vitamin may be published but figures for a very limited number of foodstuffs are given. What we need is more routine assay work in which accurate methods are used. It is uninteresting work I know, but we would not think of buying an automobile which was not made from properly tested materials. What about the foods that go into our own bodies? Often the available information is restricted to certain foods. With the greater commercialization of our food supply, certain industries have extended the analysis of vitamins in

[1]Read before the opening General Session, American Dietetic Association, Milwaukee, October 10, 1938.

their products while foods of equal or better value have been ignored completely.

3. When the distribution is known, what is the human requirement? You all realize the inherent difficulties in obtaining accurate figures for humans, but the dissection of factors, the requirements of which were supposedly established, into complexes, makes the problem even more difficult.

4. With further differentiation of individual factors, we are bound to meet the interrelationship of the various vitamins. The effect of food constituents other than vitamins may play an important rôle.

5. Lastly, what is the dietitian to do about synthetic vitamins? They are here; what stand are you going to take? The clinician is finding them valuable in many instances and surely you will want to make the proper use of them. In doing so we must not lose sight of the joy of consuming natural, nutritious food. If our natural foods need supplementation with synthetic products, should they be supplied through the grocery store or the drug store? How do these questions relate to the B complex?

I venture that there is no question but what the factor which we used to recognize as vitamin B has been dissected into several parts. One might suspect that a fire-cracker of a size which was still permissible fifteen years ago had been placed under the vitamin and that we have been busy ever since picking up the bits. However, is it not logical to assume the existence of a number of water-soluble vitamins? There are many compounds of rather low molecular weight required as catalysts or organizers in metabolism and it is not surprising that many of these cannot be synthesized within the body but must be supplied preformed in the diet. The relation of vitamins to fundamental metabolic processes is giving us a new approach to nutrition. Vitamin deficiencies may be recognized before the patient shows outward symptoms and at a time when treatment is most valuable.

In listing the factors in the B complex, I am torn between two desires: one, to simplify the list as much as possible; the other, to impress upon you that some of the newer factors should be given due consideration in spite of the meager knowledge available. The following is a compromise:

1. Vitamin B_1—Thiamin
2. Riboflavin
3. Nicotinic acid—antipellagra factor
4. Rat antidermatitis factor
5. Chick antidermatitis factor
6. Factor W

This list is quite different from that found in many of our textbooks and some of the names will certainly undergo desired changes with time, but I hope that you will not show too great hesitancy in accepting necessary changes. Personally I feel that the use of the term, thiamin, is preferable to that of antineuritic vitamin. Thiamin is concerned in carbohydrate metabolism and recent work indicates that there is no nerve degeneration in uncomplicated vitamin B_1 deficiency. However there is undoubtedly some nerve degeneration encountered in severe beriberi and vitamin B_1 has come to be closely associated with this human malady. The use of thiamin will associate this factor distinctly with faulty carbohydrate metabolism and the other changes will have to be related to a deficiency of other factors. The use of

the term thiamin is also consistent with attempts to relate the name of a vitamin to the chemistry of the compound involved.

We certainly should make an effort to use the term riboflavin rather than vitamin G. Vitamin G or B_2 has been used in so many connections that a continuation of its use leads only to further confusion. In this case the chemistry of the compound was known before its physiological function was worked out. Riboflavin has been associated mainly with growth but we are beginning to recognize its relation to nerve degeneration. Actually the nerve degeneration in beriberi may be a flavin deficiency. Similarly, cataract in rats seems to be due to a severe flavin deficiency. In this connection we must recognize that a deficiency of many of these factors may cause different types of symptoms in different species and the degree of deficiency may determine the kind of symptoms which appear. The fundamental disturbance in riboflavin deficiency is undoubtedly related to the respiratory enzymes.

We are especially fortunate in the case of nicotinic acid because here we are dealing with a compound which has been known for many years and with a disease having rather well characterized symptoms. This does not mean that pellagra as seen in the field is not complicated by other deficiencies, but it does appear that the majority of the classical symptoms of pellagra respond to nicotinic acid. There is, of course, the problem of designating those compounds related to nicotinic acid which also show antipellagric activity. We have studied the anti-blacktongue activity of a number of pyridine derivatives and in general have found that only those compounds which can be converted into the acid or amide within the body are active. Like all the other vitamins, there is a high degree of specificity since the shifting of the carboxyl group to another carbon atom in the pyridine ring renders the compound inactive. The function of nicotinic acid in the body has naturally been related to cozymase, an essential coenzyme in certain steps of the respiratory mechanism, but to date no clean-cut evidence for this relationship has been produced.

The terms "rat antidermatitis factor" and "chick antidermatitis factor" have been used only to indicate that there are two additional factors: one characterized by its effect on dermatitis-like lesions in rats; and the other, on specific lesions in the chick. There is ample evidence that the two are separate and distinct entities. The rat factor which has been designated both as vitamin B_6 and factor I has been obtained in crystalline form, and workers are active in elucidating its structure. The chick factor has been obtained only in the form of concentrates. If these factors are essential in human nutrition, and there is no reason to believe that they may not be, the above terms are not very appropriate, but more suitable terms will evolve as the studies continue. Some of you may think that the workers use poor taste in designating the new factors, but you can see that the simplest term possible for the condition observed is used. The fact that one is called a chick factor and another a rat factor does not mean that both are not required by both species, but it does show that the use of a variety of experimental animals has produced more progress than could have possibly been obtained if only one species had been used.

I am merely mentioning factor W to indicate how a factor which has a tremendous effect on the growth of rats was completely overlooked until the better known factors were supplied in pure form. Any factor or combination of factors which has such a pronounced effect on the growth of rats must have some relation to general metabolism. There are also additional factors which need investigation and this information may be equally as valuable as that now known about the more classical factors.

From this short discussion it is obvious that there may be reason to question the accuracy of many of the figures for the distribution of the B factors in foods. One error which can now be cleared up is the distribution of the antipellagra factor. All values based on feeding tests with rats are of no significance since the nicotinic acid requirement of rats is very low. Even the work with chicks, although valuable in the early work on the isolation of nicotinic acid, does not give a true measure because we now know that nicotinic acid is ineffective in preventing chick dermatitis.

The only reliable method for the estimation of nicotinic acid in foods involves the use of dogs. Sebrell emphasized this fact some time ago but the assays with dogs are long and tedious. Due to this fact the only available information was the table including a limited number of foods prepared by Sebrell. We are now comparing the response of dogs suffering from blacktongue to various levels of food and that obtained with standard amounts of nicotinic acid. From this work we have found liver to contain 100 mg. and kidney 150 mg. nicotinic acid per 100 gm. dried tissue. However, I do not believe that the extensive tables for the distribution of nicotinic acid in food are going to come from assays with dogs. We will have chemical methods and probably bacteriological methods, but in any case these methods will have to be standardized on dogs. You would expect that it would be a very simple problem to devise a chemical method for a compound as simple in structure as nicotinic acid. Suffice it to say that plenty of difficulties are encountered.

There are also many difficulties in the estimation of riboflavin. It was soon recognized that the main deficiency in the Bourquin-Sherman diet was flavin but further work has shown that this diet does not allow normal growth in rats when supplemented with adequate amounts of pure riboflavin. Considerable attention has been given to physicochemical methods of estimating flavin. The fact that this compound shows distinct fluorescence allows rather accurate quantitative estimation of pure flavin when other interfering fluorescent substances are not present as contaminants. Such a method can be used for milk and other dairy products.

Assays with chicks have been used with some success, but chicks require a number of factors that can be supplied only through natural products which vary considerably in flavin content. Snell and Strong have developed a method which depends on the growth-stimulating effect of flavin on certain types of bacteria. However, all these methods must be standardized against animal feeding experiments. We are now at work on developing a synthetic ration for rats which is complete in all respects except flavin. We have had considerable success through the use of factor W concentrates freed of the last

traces of flavin. In spite of this rather intensive work you will find figures for the flavin content of only a relatively small group of foodstuffs.

Even the figures for a vitamin as old as vitamin B_1 are none too reliable. Those obtained from growth experiments with rats may be questioned because the older rations were surely incomplete in factors other than B_1. The figures obtained with pigeons and chicks may be more reliable because the assays depend on the actual prevention of polyneuritis. We have recently developed what we feel to be an accurate method with rats. This method is now being applied to a variety of meats and meat products. From our results it is evident that not only the method of assay may be at fault but the method of drying the sample for assay is very important. For example, carefully dried pork ham contains as high as 18 I.U. per gram, while other samples not properly dried contain only one-half this amount.

Chemical methods have also been devised for vitamin B_1 but certain difficulties still need to be overcome. Undoubtedly, with time, accurate chemical methods will be devised for all these factors and it will then be as simple to determine thiamin, riboflavin, and nicotinic acid in a food as it is to determine calcium, iron, and so on, today. In the meantime the dietitian must recognize that the chemist first analyzes those foods that are easiest to test and that the mere lack of figures for a foodstuff does not mean that the material is a poor source. We should be encouraged by the fact that the available figures are being expressed in micrograms or milligrams per unit of food material. Fortunately we have had no International unit for riboflavin and nicotinic acid, and we now recognize that 1 I.U. of vitamin B_1 equals 3 micrograms of thiamin, so that conversion is simple.

A complete survey of all foods for those members of the B complex which I have just discussed, as well as the newer factors, would be of great interest to the dietitian, but the use of this information would be difficult unless we had some idea of the daily human requirement. I do not assume that I can give you figures which will stand the test of time, but I can give a little evidence for the fact that the values which have been proposed cannot be far from correct.

For thiamin you recognize 300–600 I.U. or 1 to 2 mg. per day. During the past two years we have studied the thiamin requirement of rats, chicks, and dogs. When the values are expressed per 100 gm. of ration, the minimum requirement for the three species is remarkably constant, about 100 micrograms per 100 gm. ration. If an adult consumes 500 gm. of food per day, the human requirement would be 0.5 mg.—not far below 1 to 2 mg.

Some may question the attempt to establish the flavin requirement for humans because no flavin deficiency has been established in humans. This does not mean that humans do not require flavin but that under our present food habits adequate amounts of flavin are consumed. A flavin requirement of 1–2 mg. per day has been suggested. This figure cannot be far from correct for several reasons. For example, rats require 100 micrograms of thiamin and 150 micrograms of riboflavin per 100 gm. ration. Thus the thiamin and flavin requirements are quite similar. Chicks require a somewhat higher level, about

300 micrograms per 100 gm., and it is quite reasonable that the flavin requirement is somewhat higher during the period of rapid growth. In this connection it is interesting that one quart of milk supplies 1 to 2 mg. of riboflavin.

The nicotinic acid requirement of humans has not been definitely established but the figure is probably between 10–25 mg. per day. Much higher levels have been used for the treatment of pellagra but the lower levels are consistent with our results on the prevention of black-tongue in dogs. We must recognize that it is impossible to establish specific figures for all cases because there is surely considerable individual variation. There is ample evidence for this in the case of other nutrients. There is also considerable interrelationship between the vitamins of the B complex which was unrecognized as long as natural products containing all the factors were used. Our results with rats indicate that the requirement for flavin is reduced in the presence of adequate factor W and a similar reduction in the factor W requirement when extra flavin is given. Certainly those factors closely related to food consumption may affect the total intake of related factors. The sparing action of fat on vitamin B_1 is now well known. We have recently cured rats suffering from polyneuritis and produced normal growth by replacing the total carbohydrate content of the diet with an isocaloric amount of fat. Williams has found a close relationship between the thiamin requirement and the non-fat calorie content of a diet.

These facts are not only of significance in determining the vitamin B_1 requirement of individuals consuming varying amounts of fat but also demonstrate how changes in dietary habits make it necessary to revise standards set for vitamin requirements. During the past 50 years we have decreased our vitamin B_1 intake by consuming refined foods and at the same time we have increased our requirement by increasing our sugar consumption.

You may logically ask, why go to the great effort of estimating the amount of the known water-soluble vitamins in foods when some of them at least are available in synthetic form. It is true that thiamin, riboflavin and nicotinic acid are available at a cost which is not exorbitant. The cost of the daily requirement of thiamin is 1 cent, riboflavin 4 cents, and nicotinic acid 0.1 cent. The availability of these substances at a reasonable price is of greatest importance in the clinical treatment of severe deficiencies, but personally I prefer to consume my daily requirement of thiamin in the form of a pork chop, my riboflavin as a glass or two of milk, and my nicotinic acid as a small piece of liver. However this does not mean that foods should not be fortified with some of the above compounds under certain conditions. You have met this question in the case of vitamin D and there appears to be a similar condition in the case of nicotinic acid. According to Spies there may be a million cases in the United States showing insufficient intake of the antipellagra factor. It is obvious that something should be done. I am not prepared to say whether these cases should be given liver, kidney, milk, or any other food fairly rich in nicotinic acid or the pure compound itself. The low cost of nicotinic acid makes it possible to supplement foods with the compound itself. This is a problem for our dietitians to

consider, but in passing I cannot refrain from emphasizing one point. The prices which I have quoted above are wholesale prices. If we are to use synthetic products the public in need of these substances should be given the advantage of the availability of these life-giving substances at a proper price and not be compelled to pay a price 20 to 40 times the original cost.

I am afraid that I have raised more questions than can be answered for some time to come, but I feel justified in asking these questions after reading the following statement from Dr. Marrack's chapter on "The Social Implications of Biochemistry" in the recent book, *Perspectives in Biochemistry:*

> We are no longer dealing with vague principles but with chemical compounds, whose physiological activity may be correlated with physical and chemical properties. As the sense of power over nature which this knowledge gives spreads out from the specialist to the general public, men will gather confidence to abandon traditional beliefs and inhibitions and to shape a society in which all the possible resources of science and production are used for the good of all men. . . . Investigation would be transferred from the negative object of avoiding disease to the positive object of using an abundant food supply in order to achieve a new standard of health and vigor.

THE RELATION OF DIET TO VARIOUS FORMS OF BRIGHT'S DISEASE[1]

FRANCIS D. MURPHY, M.D.[2]

FORMERLY the prescription of a so-called nephritic diet reflected the impression that nephritis referred to a single kidney defect which could be influenced by a favorable type of diet. The terms Bright's disease and nephritis in their broad sense embrace a variety of renal diseases which differ from one another in etiology, course, prognosis and treatment; yet because they have certain clinical features in common they have been classed together. Diet treatment for all types of Bright's disease consisted in restriction of protein, fluid and salt. In recent years added information concerning the relationship of the kidney to protein, mineral and water metabolism has led to a better understanding of the rôle of the diet in various forms of Bright's disease. The practical use of diet regulation requires an understanding of two essentials: (a) the nature and the degree of renal impairment, and (b) the manner in which diet regulation overcomes the kidney disorder and restores the metabolic balance to normal. Although many advances have been made in the study of diets in renal diseases, there is as yet no agreement concerning some of the fundamental problems of diet adjustment. This is reflected, for example, in the unsettled problem concerning the value of the high protein diet in some diseases of the kidney and its harmfulness in others.

A stumbling block in an understanding of the use of a nephritic diet is that nephritis or Bright's disease is not a single disease like tuberculosis, but a number of diseases, each requiring special management. The confusion is made greater because some periods or phases in the course of each form require entirely different adjustments. Trends in the diet regulation have changed rapidly, following the advances in the knowledge of the kidneys' function in maintaining water balance, electrolyte equilibrium and protein metabolism in disease. At one time protein was rigidly controlled; then came a period during which it was given more liberally; later, high protein diets were used to overcome edema in certain cases of hypoproteinemia. Recent investigative work suggests that even a moderately high protein diet not only fails to correct the hypoproteinemia, but that it actually causes progression of the renal lesion.

I should like now to turn to a consideration of the various forms of Bright's disease and analyze them in view of the dietary requirements. In a general way the aims of diet adjustment in nephritis may be summarized as follows: (a) to retard the progress of the renal lesion especially in the early stages of glomerulonephritis when recovery may be anticipated; (b) to relieve the diseased kidney of extra work by giving a diet which diminishes renal activity to a minimum; (c) to reduce the retention of

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nitrogen in the blood by restricting the intake of protein; (d) to prevent or control the formation of edema by regulation of the protein, fluids and salt in the diet; and (e) to maintain the proper nutrition of the body especially in chronic forms where inanition may be provoked by rigid restriction of salt, vitamins and minerals.

At the expense of appearing too elementary, I shall discuss some phases of the diet problem in Bright's disease which may seem commonplace but which I believe are necessary in an attempt to crystallize some of the newer ideas. For the present purpose all forms of Bright's disease may be divided into the acute and chronic forms. For our purpose here, there is no need to classify the acute form further. The chronic form may be subdivided into three main types: (a) chronic glomerulonephritis, (b) chronic nephrosis, and (c) renal arteriosclerosis.

ACUTE NEPHRITIS

At the height of the acute phase of acute nephritis the indications for food regulation are specific. Because this stage is short, no special attention need be given to the caloric intake, but the food should be of a kind which adds no extra work to a kidney already overburdened. The diet should aim to retard the inflammatory process by its low protein and acid content. A thousand to 1200 cc. of fruit juices, milk and cooked fruits are adequate. In uncomplicated cases of nephritis, diet regulation is easy, but the development of renal insufficiency, hypertension or pronounced edema may cause difficulty. Then, too, vomiting and nausea may make the regulated intake of food impossible and intravenous feeding must be resorted to.

The protein intake in acute nephritis should be kept as low as possible. Salt and water administration require more consideration. Some advocate restriction of fluids to 600 to 800 cc. a day, while others believe a greater amount—as much as 3000 cc. a day—is indicated. This disagreement cannot be settled offhand because the requirements in various cases of acute nephritis are not uniform. To realize the importance of this problem one must remember that in acute nephritis there are three important considerations: (a) kidney shut-down with a rapid rise in nonprotein nitrogen leading to uremia must be guarded against; (b) cardiac dilatation and failure must be prevented; and (c) increased cerebrospinal fluid pressure from hypertension resulting in injury to the brain and convulsions must be controlled. Since the excretion of toxic end products of metabolism is dependent to a large degree upon the output of urine, this must be maintained if possible. Therefore, a satisfactory intake of fluid must be given each day. Edema, unless it is very extensive, constitutes no legitimate indication for restricting fluids. Therefore the fluid intake should be kept at about 1500 cc. a day unless the development of heart failure requires its restriction. In the presence of hypertension and oliguria the administration of normal amounts of fluid may cause an increase in the cerebrospinal fluid with a consequent rise in spinal fluid pressure of the brain, provoking convulsions. If there is oliguria and a mounting nonprotein nitrogen, adequate fluid administration is necessary. Yet if, in addition to these undesirable features, marked hypertension

and increased cerebrospinal fluid pressure (above 200 mm. of water pressure) exist, rigid restriction of fluid is indicated. Certainly this is a two-horned dilemma. Such cases require a restriction of fluid at the expense of a possible threatening uremia, because a convulsion is apt to be more dangerous than the increasing acidosis and nonprotein nitrogen. When vomiting and nausea occur, the loss of fluids and salt and the scanty output of urine cause a retention of nitrogen and acids and a reduction of bases in the blood. Uremia may threaten. The administration of at least 1500 cc. of fluid a day with 10 gm. or more of salt is indicated, and these ingredients may be given intravenously if the patient cannot take them by mouth. In this way the water balance and the electrolyte equilibrium may be restored to normal.

After the severity of the acute phase has passed by, there is a transitional stage in which the kidney lesion may heal completely or may progress into chronic nephritis. The importance of diet regulation during this period has not been sufficiently emphasized. A patient may consider himself cured when the kidney lesion is really latent, and may fail to restrict his diet and exercise until chronic nephritis has developed. The belief is becoming more widespread that most cases of chronic nephritis develop from acute cases that have gone undiagnosed, untreated and unhealed (1–3). Lyttle (4) does not agree to this, but he does believe that early diagnosis and adequate treatment may prevent some of the fatalities in the acute stage. Two suggestive investigations have recently been published in connection with the dietary precaution in the healing stage of nephritis. One of the most significant studies has been that of Smadel and Farr (5) who produced nephritis by injection of nephrotoxic serum into rats and concluded that diet influenced the course of the disease markedly. When the diet contained only 5 per cent of protein the kidney lesions in the rats surviving the acute stage healed readily and completely. If the diet contained 40 per cent of protein the disease progressed and the rats died of chronic nephritis. While this work is speculative, it is an indication of the present trend in the application of diet to the treatment of nephritis. In regard to the problem of healing of the chronic lesion, Lyon (6) has conducted some investigations on patients which suggest that a kidney lesion heals more rapidly if the diet is adjusted so that foods such as meat, bread, oatmeal, eggs and rice, which cause an acid urine, are reduced to a minimum. He recommends the basic ash diet to promote healing of the kidney lesion. This consists of milk, vegetables and fruits which, with some exceptions, cause the urine to be alkaline in reaction.

CHRONIC NEPHRITIS

Chronic nephritis may be subdivided into cases with and those without edema. In cases with no edema, water and salt restriction is of little importance. The patient usually has hypertension, some cardiac hypertrophy, albumin and casts in the urine and perhaps nitrogen retention. The most important aspect of dietary regulation is the adjustment of the protein because a high protein diet throws an extra strain upon the kidney, increases the retention of nonprotein nitrogen and may have an unfavorable

effect upon the renal lesion itself. On the other hand, if the diet is too rigidly restricted, inanition, a negative nitrogen balance, and hypoproteinemia which may help provoke edema, are likely to occur; and a diet containing less than 45 gm. of protein a day is known to be deficient in iron, calcium and phosphorus. Fluid must not be restricted below 1800 to 2000 cc. a day because the kidneys in chronic nephritis are unable to concentrate solids in the urine; therefore a sufficient intake of fluid is necessary to assure an adequate excretion of poorly concentrated urine. In these cases, then, the diet required to prevent undernutrition, provide necessary minerals, promote adequate urinary output, and maintain a normal electrolyte balance, may be summarized as follows: protein, 50 to 70 gm. a day; fluids, about 2000 cc.; and an average amount of salt. Sometimes sodium chloride is unnecessarily restricted in diets of patients with chronic nephritis. It must be kept in mind that sodium chloride is important and indispensible to the body. Since it cannot be formed in the body it must be taken in food or fluid. Long continued restriction, vomiting, diarrhea or sweating which depletes the body of sodium chloride may cause death. In nephritis, diuretics may reduce the sodium chloride in the body, rigid restriction may further deplete the system of it, vomiting may set in and aggravate the condition by loss of hydrochloric acid, and finally the patient may sink into coma and die from the results of an overanxious treatment. Administration of 1000 cc. of normal saline may stop the vomiting, promote diuresis, reduce acidosis and rescue the patient from uremia and death.

LIPOID NEPHROSIS AND THE NEPHROTIC SYNDROME

There are several types of nephrosis which are characterized by degenerative changes in the epithelium of the tubules and glomeruli of the kidney. Lipoid nephrosis, the type usually designated by the term chronic nephrosis, is most benefited by dietary regulation. Although lipoid nephrosis is a condition considered to be separate and distinct from chronic nephritis, patients with nephrosis and chronic glomerulonephritis with lipoid changes in the tubules have the nephrotic syndrome in common, and from the dietary standpoint these factors are of importance in both conditions: (a) Heavy albuminuria and edema are present. (b) A high protein diet has been advocated to increase the blood plasma protein. (c) Fluids and salt have been restricted in order to diminish the sodium chloride in the blood and tissues, thereby reducing edema.

In an analysis of the edema of the nephrotic type it is widely believed that a reduction of the osmotic pressure of the plasma is the main etiological factor. For practical purposes the osmotic pressure may be approximated by the study of the protein content of the blood plasma. While there is not an exact correspondence between the amount of albumin in the blood stream and the osmotic pressure, the correlation is close enough for practical purposes. The osmotic pressure is the main factor in determining the presence or absence of edema, but the effect of sodium chloride in the production of edema must not be dismissed lightly. One of the kidneys' chief functions is to regulate the salt content of the blood. If too much sodium chloride is given, an excessive

amount is retained in the tissues and holds water with it. It is claimed by some authorities that chlorine plays an insignificant rôle and that the production of edema is a specific effect of sodium (7). This idea has been questioned by Atchley (8). At present it may be said that an excessive amount of salt and water will provoke edema provided the osmotic pressure of the blood stream is lowered by hypoproteinemia. If there is no reduction of osmotic pressure and no hypoproteinemia, an excess of sodium and water may provoke edema after a long period of time or may fail to do so at all.

From the dietetic standpoint there is no more interesting problem than that of the relationship of the serum protein to the formation of edema. Since 1917 when Epstein (9) applied the Starling theory of osmotic and hydrostatic pressure equilibrium to fluid exchange, the tendency has been to give high protein diets in renal edema in an effort to increase the protein in the blood stream and elevate the osmotic pressure. It has been believed that either a loss of protein in the urine or the lack of protein in the diet is the chief cause of hypoproteinemia. Within recent years this "loss and lack" theory has been questioned. Bloomfield (10) believes that there is another factor, the impairment of the protein forming mechanism of the body in the production of hypoproteinemia. Melnick and Cowgill (11) have recently reviewed the data supporting these various contentions. They also uphold the theory that a disturbance of the protein forming mechanism, not loss or lack of protein, is largely responsible for edema formation. This conception may have a far-reaching effect on the practice of giving high protein diets in cases of edema. However, at the present time there is no way known of stimulating the serum protein regenerating mechanism of the body, and the high protein diet is about the only method of increasing the protein of the blood stream. Yet, as stated above, high protein diets are aggravating to an existing kidney lesion and there is some evidence that they may even be the cause of kidney damage. With this in mind one must use the high protein diet cautiously in treating cases of chronic nephritis with the nephrotic syndrome. In genuine lipoid nephrosis, however, where the kidney lesion is not an inflammatory one as in chronic glomerulonephritis with edema, a very high protein diet may be given without any fear of blame.

Before dismissing the subject of nephrotic edema, the acid ash diet as emphasized by Lashmet (12) must be considered. He believes that edema is caused not by the kidneys but by the increased avidity of the tissue for sodium salts and the consequent retention of water. He was encouraged by his effort to remove edema by displacing sodium from the tissues and the blood stream by giving acids, acid producing drugs or an acid ash diet. However, if the work of other investigators as Lyon (6) is to be taken seriously, this procedure may aggravate the kidney lesion of chronic nephritis.

In view of these conflicting ideas, then, the sensible procedure is (a) to give the amount of protein necessary for proper nutrition of the body, (b) to give an adequate amount of fluid (1500 cc. a day) unless edema develops, and (c) to restrict the amount of salt to that contained in

the food itself, leaving a so-called salt poor diet for edematous patients.

RENAL ARTERIOSCLEROSIS

This is the type of kidney disease that is considered the anatomical counterpart of essential hypertension. Hypertension, nitrogen retention and polyuria are the main features, and if edema occurs it is due to heart failure rather than to the kidney damage. The objectives of diet regulation in these sclerotics are (a) to limit the protein in the diet in order to keep down nitrogen retention, (b) to reduce weight by controlling the caloric intake, (c) to lessen kidney irritation by giving a basic ash rather than acid ash diet, (d) to control the salt in the diet in order to forestall the development of edema, (e) to provide an adequate amount of fluid (2000 cc. or more a day) in order to compensate for the urine of low concentration that is secreted by the kidneys, and (f) to strengthen the heart muscle by a high vitamin diet, especially one adequate in vitamin B.

The kidney of renal arteriosclerosis or of chronic glomerulonephritis becomes increasingly inefficient and the time ultimately arrives when uremia can be held off no longer. Dietary precautions should be started early and continued persistently in order to prevent the occurrence of uremia as long as possible. It is not known how effective diet restriction is in forestalling uremia, but the opinion is that a great deal can be done by judicious dietary management. When the period of impending uremia arrives, acidosis develops. Uremia is precipitated by a faulty formation of ammonia by the kidney and the retention of acid products in the blood, and, as pointed out by Peters and Van Slyke (13), the uremic patient appears to be unable to prevent the loss of salt when conservation is urgently needed. The kidney in this late stage is known to waste the bases of the body rather than conserve them. The therapeutic indication then is to give fluids and salt (Ringer's solution), in quantities of 1500 cc. or more a day, for the purpose of maintaining the water balance and the electrolyte equilibrium of the body. Rigid restriction of sodium chloride is not indicated in late nephritis because a hypochloremia as well as a substantial loss of sodium is present. When sodium chloride and sufficient fluids cannot be taken by mouth, a normal saline solution may be given intravenously.

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CALORIC AND VITAMIN VALUES IN THE DIET OF THE ARTHRITIC PATIENT[1]

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THE purpose of this study was to investigate the vitamin and mineral content of the diet in a selected group of arthritic patients. This group was selected with the purpose of obtaining uncomplicated, clear-cut, rather severe examples of the various types of chronic arthritis. With this in mind, 11 cases of ankylosis, atrophic (rheumatoid) arthritis, 11 cases of *morbus coxae senilis*, 5 cases of generalized hypertrophic (degenerative, osteo-) arthritis, and 5 cases of root pain, (radiculitis—hypertrophic arthritis with radicular symptoms) were carefully studied, comparing their dietary intake previous to treatment with their physical condition as reflected by x-ray, hemoglobin, sedimentation and blood vitamin C tests.

Each patient was interviewed individually and a diet history was taken on a form made for this purpose. A sample day's menu was recorded on each history, and also the approximate weekly amounts of the different foods such as milk, whole grain cereals, meat, eggs, fruits and vegetables which the patient ate. From this material it was possible to estimate what had been the daily diet of each patient, with sufficient accuracy to be of clinical value. The patient's height and weight were taken into consideration in calculating the theoretical adequacy of the various dietary items. The standards used for normal were those advocated by Rose and Sherman and are shown in table 1.

Recent suggested standards indicate the possibility that the standards used were too low. Jessamine Williams of Oregon State College set the vitamin B standard as 400–600 Sherman units. This is considerably higher than that used in this study, in which the normal varied from 200–300 Sherman units. The vitamin C standard suggested by her is also higher than the one used here. The range was from 60–150 Sherman units. The average requirement in this paper ranges from 40–60 Sherman units. The vitamin G standard used corresponds with that set by Williams. The normal for vitamin G was 400–500 Sherman units.

The complete analytical data are contained in table 2.

From this table, certain facts appear self-evident. First, in regard to the caloric intake, it was found that most of these patients, irrespective of the type of arthritis, were not obtaining the calories which were deemed adequate for them. It is important, we believe, to emphasize that this subcaloric intake was not limited to the atrophic group of cases but was also present in the hypertrophic group. All the patients were from the lowest income level, which may explain this deficiency, and also the fact that when an analysis of the protein content was made, it was found that with

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[2] The authors wish to acknowledge the direction and encouragement of Mary W. Northrop who made the completion of this study possible.

very few exceptions the patients' diets were deficient in protein; in fact, the median protein intake for the various groups was over 20 per cent below the calculated requirement. Rose states that a low cost diet, in which 45 per cent of the calories come from starchy foods, is within the range of safety as to nutritional adequacy. These patients received from 30–50 per cent of their total calories from concentrated carbohydrates, and the diets would therefore seem to be safe in this regard. However, Rose assumes caloric sufficiency, which these patients did not have. The calcium and phosphorus studies were equally revealing. It was found that calcium deficiency was relatively uncommon but that phosphorus deficiency of a marked extent frequently occurred. It is noteworthy that in all cases in which clinical decalcification was present, as measured by the x-ray, there was a marked phosphorus depletion. The reverse, however, was not found to be true. Four cases, in fact, had a marked phosphorus deficiency without clinical decalcification.

We next studied in these cases the relationship between iron intake, hemoglobin and sedimentation. Much to our surprise there appeared to be no close relationship between iron intake and hemoglobin. Further, when anemia was present, it was not always in the cases with markedly elevated sedimentation. One would conclude from this that iron, as calculated by diet studies, was either a very rough measure, or that the standards were not applicable to diseased human beings.

The next relationship which was studied was that between vitamin C intake, vitamin C blood level and sedimentation. Here it became apparent that most of these cases had an adequate vitamin C intake. When one considers, however, that in the entire group there was only one patient who had a vitamin C level of over 1 mg., one is forced

TABLE 1

	STANDARD	AUTHORITY
Energy	14–16 calories per pound of normal body weight	Rose, M. S.*
Protein	½ gram per pound of normal body weight	Rose, M. S.
Calcium	0.68 gm.	Sherman, H. C.†
Phosphorus	1.32 gm.	Sherman, H. C.
Iron	.015 gm.	Sherman, H. C.
Vitamin A	5000 Sherman units 1 Sherman unit = 1.4 International units	Rose, M. S.
Vitamin B_1	10% of total required calories expressed in Sherman units 2 Sherman units = 1 International unit	Rose, M. S.
Vitamin C	2% of total required calories expressed in Sherman units 1 Sherman unit = 10 International units‡ 1 International unit = 0.05 mg. Ascorbic Acid	Rose, M. S.
Vitamin G	20% of total required calories expressed in Sherman units	Rose, M. S.

* Rose, M. S.: A Laboratory Handbook for Dietetics, 1937 edition.
† Sherman, H. C.: The Chemistry of Food and Nutrition, 1933 edition.
‡ Daniel, E. P., and Munsell, H. E.: Vitamin Content of Foods, 1937.

TABLE 2

Summary of Findings in 32 Cases of Chronic Arthritis

	CASE NO.	CALORIES		PROTEIN		CALCIUM		PHOSPHORUS		DECALCIFICATION (X-RAY)	IRON		HEMOGLOBIN		SEDIMENTATION	ASCORBIC ACID INTAKE		BLOOD C	A INTAKE		B INTAKE		NEURITIS	G INTAKE	
		Number	% Deficient	Amount	% Deficient	Amount	% Deficient	Amount	% Deficient		Amount	% Deficient	Per cent	Cell volume		Amount	% Deficient		Amount	% Deficient	Amount	% Deficient		Amount	% deficient
				grm.		*mg.*		*mg.*								*mg.*			*I.U.*		*I.U.*			*I.U.*	
Atrophic arthritis	69758	1730	27	58.7	30	.78	0	1.15	14	0	.009	40	80	43	7	72.0	0	.35	7405	0	480	0	0	652	0
	105362	1635	28	60	9	.75	0	1.18	10	0	.16	0	98	48	9	28.5	0	.82	4100	17	318	0	0	601	0
	107114	2000	32	68	17	.73	0	1.07	19	0	.010	33	98	44	47	59.0	0	.75	2769	44	389	0	0	470	0
	89635	2178	11	78	0	1.25	0	1.68	0	0	.016	5	104	38	53	78.5	0	.32	6009	0	423	0	0	861	0
	24209	1343	45	61	31	.88	0	1.05	20	0	.009	40	70	43	92	55.5	0	.60	4358	10	334	0	0	566	0
	64927	1515	26	59	17	.60	11	1.03	20	0	.010	33	68	34	90	49.5	0	.36	21330	0	330	0	0	529	0
	47857	733	60	19	66	.311	54	.494	62	0	.004	73	84	34	84	23.0	5	.54	5161	5	229	0	0	169	54
	106553	1748	37	62	30	.87	0	1.30	5	0	.019	0	85	43	70	53.0	0	0.40	18435	0	371	0	0	497	11
	89469	1660	22	64	27	.94	0	1.32	5	0	.010	33	75	42	63	39.5	0	.24	17982	0	366	0	0	368	12
	95145	2475	0	97	0	1.92	0	2.43	0	0	.014	6	85	36	27	37.5	0	.27	7512	0	289	0	0	627	0
	107267	1081	45	40	43	.407	0	.701	47	Pres.	.007	46	88	40	34	42.5	0	.22	1539	67	262	0	0	354	10
Hypertrophic arthritis	10441	1616	23	59	15	.73	0	.99	25	0	.012	20	92	45	5	47.5	0	.45	6312	0	298	0	0	415	2
	54676	1748	13	51	23	.72	0	1.25	5	0	.0067	60	70	36	6	21.0	5	.98	5502	0	190	5	Pres.	313	20
	108615	1837	24	57	29	.821	0	1.12	15	0	.015	0	84	41	23	21.0	12	.15	3038	39	340	0	0	395	17
	377	1928	25	63	26	.494	27	.865	35	0	.006	60	90	49	4	20.0	21	.38	6243	0	195	25	0	320	38
	3312	1468	32	52	29	.551	19	.931	29	0	.009	40	100	45	42	67.0	0	.80	4053	18	346	0	0	530	0
Senile hip	6208	1174	46	43	40	.487	28	.82	38	0	.013	13	104	50	70	26.0	0	.41	2953	40	218	5	0	256	40
	6268	1308	45	56	35	.68	5	.82	38	0	.007	53	80	41	21	24.0	5	.75	5016	5	222	5	0	235	50
	57902	2718	0	73	0	.468	31	.647	51	Pres.	.0087	42	100	46	7	42.5	0	.27	5230	0	168	24	0	159	64
	1701	1498	23	42	40	.76	0	.92	31	0	.0085	44	92	48	9	50.0	0	.99	6727	0	217	0	0	475	0
	106255	1442	41	53	38	.789	0	.91	31	Pres.	.0148	6	80	38	56	51.0	0	.30	8305	0	265	0	0	459	0
	52360	1850	24	64	20	.694	0	1.083	18	0	.012	20	90	48	4	34.5	0	.34	3281	34	264	0	0	387	21
	24203	2550	0	78	3	1.25	0	1.774	0	0	.015	5	85	47	31	31.5	0	1.15	5008	5	619	0	0	684	0
	31315	2673	0	82	0	.86	0	1.29	0	0	.02	0	94	41	55	50.7	0	.25	5057	5	384	0	0	474	6
	1034	1512	38	47	44	.29	57	.52	60	0	.0072	53	92	39	40	24.5	5	.57	2670	46	173	29	0	267	45
	21112	1688	39	60	25	1.775	0	1.25	6	0	.0166	5	90	45	13	82.0	0	.25	3145	37	271	0	0	519	0
	101441	1976	5	68	5	.633	7	1.02	22	0	.0086	46	90	47	24	23.5	0	.38	3772	24	201	5	0	466	0
Neuritis	104100	1651	31	82	0	.51	25	1.41	0	0	.014	5	100	47	18	31.5	0	.33	4135	15	335	0	Pres.	209	57
	96927	1895	12	59	17	.746	0	1.004	24	0	.0073	51	112	50	1	28.5	0	.39	4589	8	179	17	Pres.	345	20
	38926	1358	26	43	29	.33	51	.887	32	Pres.	.0096	36	80	40	19	44.0	0	.27	5125	5	253	0	Pres.	374	0
	17499	2128	4	60	25	.611	10	1.212	8	0	.0141	6	100	45	8	44.0	0	.50	8773	0	570	0	Pres.	387	13
	11189	1645	19	71	0	1.42	0	1.65	0	0	.0325	0	98	50	2	73.5	0	.30	5055	0	541	0	Pres.	601	0

Pres. = present.

to conclude that a study of the intake does not reveal the true saturation of the organism. Further, there was no close correlation between the disparity of the intake and the blood level and the rapidity of the sedimentation test. One must conclude, therefore, that in this group of patients there occurred either a markedly increased need for vitamin C or markedly deficient utilization. Further, we found that this disagreement between intake and blood level was not purely a matter of toxicity or infection. It might be suggested from the study of these data, that these individuals had a distinctly abnormal vitamin C metabolism and not a heightened need for the vitamin.

Vitamin A was calculated for the diets and in the cases in which it was markedly deficient there tended to be an increase in the sedimentation rate. Vitamin B and G were also calculated. It was found that deficiencies in vitamin B occurred relatively seldom and were not accompanied by neuritis in more than 50 per cent of the cases. Vitamin G deficiency occurred with considerably greater frequency and was found to be equally distributed throughout the various types of arthritis. It is to be emphasized that this study failed to reveal any certain difference in the dietary characteristic of any particular type of arthritis.

CONCLUSIONS

The diets in 32 cases of chronic arthritis admitted to the Out-Patient Clinic at the King County Hospital were studied in detail. This study revealed that these cases were usually upon a deficient caloric and deficient protein diet. The mineral content of their dietary was frequently subnormal. The only vitamin in which the diet was deficient with any great frequency, was G. It was further pointed out that the hemoglobin was not entirely proportional to the iron intake even when this was markedly deficient, nor did evidence of toxicity as measured by the sedimentation test seem to influence materially the body's utilization of available dietary iron. Furthermore, while vitamin C was rarely deficient in the diet, it was almost universally low in the blood and the disparity between the two was not a simple matter of toxicity. Finally, it was found that in cases complicated with neuritis, vitamin B tended to be normal. Vitamin G was frequently deficient in all types of cases.

Pres. = present.

FOODS THAT DISAGREE WITH HEALTHY PEOPLE

II. The Influence of the Method of Preparation on the Disturbing Effects of Cabbage and Cauliflower[1]

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ATTEMPTS that have been made to determine what foods disagree with people have shown that vegetables of the cabbage family rank near the top of the list as a cause of gastro-intestinal disturbances (1–3). Cooked cabbage has been reported as the greatest offender, yet raw cabbage has also been blamed for discomfort. Hughes, in questioning 1000 healthy subjects, found some individuals who stated that they believed the cabbage responsible for their discomfort was much overcooked. Others said that cabbage cooked in a closed kettle was more likely to cause disturbing symptoms than cabbage cooked in open kettle. These statements are so closely related to the well-known reactions that occur in vegetables of the cabbage family during cooking that they deserve consideration.

The volatile sulfur compounds are found in plants as glucosides. When acted upon by enzymes, or when treated with acid or alkali, or more slowly by boiling, the glucosides decompose to form a carbohydrate and one or more other substances. The latter may be phenols, allyl sulfide, or allyl isothiocyanate. Further decomposition may form hydrogen sulfide. The strong flavor of old cabbage, cauliflower, and turnips is thought to be due to the setting free of sulfur compounds by enzymes. Peterson (4) found a higher percentage of volatile sulfur compounds in plants grown in a sulfur-rich soil than in a sulfur-poor soil, indicating that samples of the same vegetable may vary.

Simpson and Halliday (5) have studied the behavior of sulfur compounds in vegetables on cooking. Long cooking of vegetables of the cabbage family develops strong, disagreeable flavors and odors. Longer cooking and stronger flavor are accompanied by increased acidity. The length of time of cooking required for strong flavor to develop varies with the vegetable, the proportion of water to vegetable, and whether the cooking is started in cold or in boiling water. Simpson and Halliday, in determining the total volatile sulfur and hydrogen sulfide evolved when cabbage and cauliflower were cooked for different lengths of time, found that with prolonged cooking the decomposition products increase. Cauliflower gave off more volatile substances than cabbage in the same period.

Starting the vegetable to cook in cold or tepid water permits plant enzymes to decompose the sulfur compounds before the enzymes are destroyed by heat. It also prolongs the cooking time. Retention of volatile acids by covering the kettle favors decomposition of sulfur compounds. Starting the vegetables to cook in boiling water, using an uncovered kettle, and cooking for the shortest possible time to produce tenderness, should be the conditions under which

[1] Received for publication, August 18, 1938.

the most desirably cooked vegetable is obtained.

The study reported here was undertaken for the purpose of determining whether method of preparation has any influence on the disturbing effect of cabbage and cauliflower.

EXPERIMENTAL PROCEDURE

Twenty healthy subjects within the age range of 20 to 50 were selected because they stated they had gastro-intestinal disturbances from eating cabbage. The subjects' own statements that they were in good or excellent health were verified by statements from physicians. So far as known, there were no cases of allergy or of gastro-intestinal diseases in the group.

Preliminary to the experiment, the subjects were questioned carefully in order to determine their reactions to cabbage. They were also questioned about the disturbing effects of other foods. It was evident with this group as with others investigated by one of the authors, that careful cross-questioning is necessary to obtain the desired information. Foods that were mentioned as being disturbing were not included among the foods served during the experimental period.

The subjects were allowed to choose their own breakfasts but were asked to limit their choices to foods known to have no disturbing effect. They were also asked to do no between-meal eating or drinking of carbonated or other beverages except water. The foods served at luncheon and dinner were simple foods, simply prepared with a minimum amount of fat and not overseasoned. Some subjects said they were disturbed by greasy foods.

The luncheon consisted of potatoes in some form, cabbage or cauliflower, bread, butter, fruit, and beverage. The dinner included meat, either beef or veal (chiefly pan-broiled or roasted), a green vegetable, a salad, bread, butter, beverage, and fruit or a simple milk and egg dessert. Salad dressing was of the cooked rather than oil type. Potato was served with the cabbage or cauliflower at luncheon because it is a food bland in flavor and because none of the group included potato as a disturbing food. The experiment was divided into two five-day periods.

During the first five consecutive days, cauliflower was served prepared in one of the following ways:

1. Raw flowerets, with most of the core removed. Served as salad.
2. Cooked only until tender and buttered.
3. Raw, including the core on each floweret. Served as salad.
4. Cooked 45 minutes and buttered.
5. Cooked 1½ hours and buttered.

During the second five-day period, cabbage replaced the cauliflower in the luncheon menu and was prepared in the following ways:

1. Raw, very finely shredded. Served as salad.
2. Cooked only until tender and buttered.
3. Raw, coarsely shredded (¼ inch shreds). Served as salad.
4. Cooked 45 minutes and buttered.
5. Cooked 1½ hours and buttered.

The cooked cabbage and cauliflower were boiled according to the method suggested by Halliday and Noble (6), except for time of cooking. The cauliflower, cooked only until tender, averaged about a 15-minute cooking period

TABLE 1

Percentage of subjects disturbed by cabbage and cauliflower prepared in various ways

	METHOD OF PREPARATION				
	Raw (fine)	Raw (coarse)	Cooked only until tender	Cooked 45 minutes	Cooked 1½ hours
	Percentage of cases				
Cabbage	10.0	25.0	5.0	26.3*	75.0
Cauliflower	50.0	45.0	5.0	20.0	70.0

* Based on 19 cases; one subject did not eat the cabbage on that day.

there might be a relationship between size or firmness of particles (with consequent difficulty in mastication) and disturbing effect. It is interesting to note that so many subjects were disturbed on the first day when raw flowerets were served, that they, themselves, suggested that possibly the vegetable was not well enough masticated. Raw cauliflower was a new food to the majority of the subjects. On their own initiative they took pains to do more complete masticating on the day coarse cauliflower was served. The number disturbed was

TABLE 2

The number of cases reporting various types of reactions experienced with the different methods of preparation of cauliflower

	METHOD OF PREPARATION					
	Raw (fine)	Raw (coarse)	Cooked only until tender	Cooked 45 minutes	Cooked 1½ hours	Total
Belching	3	4	1	1	5	14
Gas	2	1		2	4	9
Taste	2	2			2	6
Regurgitation	1					1
Abdominal pain	1	1				2
Nausea	1				2	3
Diarrhea		1				1
Headache		1		1		2
Epigastric pain	1					1
Total	11	10	1	4	13	39

and the cabbage 12 minutes. The time periods for over-cooking were arbitrarily chosen as 45 minutes and 1½ hours. Many persons use longer cooking periods than either of the above but only new cauliflower and cabbage were in the market at the time of this study and longer cooking periods than 1½ hours would have resulted in extreme disintegration of the vegetables.

The vegetables in the raw state were served in fine and coarse forms to see if slightly smaller on that day but was still a high percentage of the total group.

It would have been valuable to use storage or older cabbage and cauliflower in addition to the young, new product, particularly because enzyme action on the vegetables brings about changes similar to those which occur from overcooking. Old cabbage, therefore, is stronger in flavor both in the raw state and when overcooked.

Each subject was questioned concern-

ing reactions to the cabbage or cauliflower on the day following that on which the vegetable was eaten. Subjects were also asked to list foods eaten at breakfast, with approximate amounts.

Results obtained with both cabbage and cauliflower are shown in table 1. As may be seen, the vegetables cooked for 1½ hours were the worst offenders. Next in order were raw cauliflower, then coarsely shredded cabbage and the vegetables cooked for 45 minutes. Finely shredded, raw cabbage disturbed 10 per cent of cases and the vegetables cooked only until tender were the least disturbing.

Table 2 shows the number of cases reporting various types of reactions experienced with the different methods of preparing cauliflower. Some subjects reported more than one type of disturbance on the same day. Table 3 shows the number of cases reporting various types of reactions with different methods of preparing cabbage. Table 4 summarizes tables 2 and 3 and shows percentages of cases reporting various types of disturbances caused by cabbage and cauliflower. Gas and belching were the most prominent types of disturbances caused by cabbage and cauliflower.

SUMMARY

Ninety-five per cent of cases were affected by some method of preparing cabbage and cauliflower.

The vegetables cooked for 1½ hours were the worst offenders, with other methods listed in descending order: raw cauliflower, cabbage cooked 45 minutes, raw, coarsely shredded cab-

TABLE 3

The number of cases reporting various types of reactions with different methods of preparing cabbage

	METHOD OF PREPARATION					
	Raw (fine)	Raw (coarse)	Cooked only until tender	Cooked 45 minutes	Cooked 1½ hours	Total
Gas		2		2	11	15
Belching	1	1			2	4
Taste		1		1	1	3
Indigestion	1					1
Diarrhea					1	1
Abdominal pain			1			1
Epigastric pain				2		2
Total	2	4	1	5	15	27

TABLE 4

Types of disturbances caused by cabbage and cauliflower

	CABBAGE	CAULIFLOWER
	Per cent of cases affected	
Gas	55.55	23.08
Belching	14.80	35.88
Taste	11.10	15.36
Epigastric pain	7.40	2.56
Diarrhea	3.70	2.56
Abdominal pain	3.70	5.12
Regurgitation	0.00	2.56
Nausea	0.00	7.68
Headache	0.00	5.12
Indigestion	3.70	0.00

bage, cauliflower cooked 45 minutes, finely shredded cabbage, and cabbage and cauliflower cooked only until tender. Only 5 per cent of cases were affected by the vegetables cooked only until tender.

Although the overcooked vegetables had disagreeable flavor, the new cabbage and cauliflower used in the experiment were mild compared to old vegetables similarly cooked.

From the limited data obtained in this experiment, it would seem that length of cooking time is definitely related to the disturbing effects of cooked cabbage and cauliflower.

Coarsely shredded cabbage was more disturbing than the finely shredded vegetable, but the coarser cauliflower (core included) did not prove to be more disturbing than the tender flowerets without the core. Whether the more thorough mastication of the coarse flowerets reduced the number who were disturbed by cauliflower cannot be stated. Raw cauliflower, fine or coarse, was very disturbing to this group.

The one subject who was not disturbed by any of the cabbage and cauliflower eaten during this experiment stated at the end that cooked cabbage which had disturbed her previously was cooked with fat. She was one subject who, at the beginning, listed greasy foods as causing discomfort.

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EDITORIAL

A View of American Life Through Old Hotels and Menus[1]

A unique collection of menus from well-known hotels, showing the changing trends in American living and eating habits, has been compiled by Arnold Shircliffe over the past twenty-five years. The hotels as well as the menus reflect changing manners and customs of the country. Represented in these menus are hotels which have led in making America famous for ultraluxurious hotel living.

The first building erected in the country solely as a hotel, was the City Hotel, New York, a building of seventy-three rooms which European visitors at the time called an immense establishment. In reality, it was a large inn, since the proprietors, Willard and Jennings, clung to the practice of centering the management around a bar which dominated all operations. Whether inn, lodging house or hotel, all appeared to be content with extremely limited bathing facilities until 1826, when the first public bathroom was installed in the Barnum City Hotel of Baltimore.

Even a century ago, Americans were setting the pace with regard to hotels. As each new building was erected proprietors either borrowed ideas from others or perfected their own. In 1829, America's finest hotel of the period, the Tremont, in Boston, boasted many innovations. For example, the doors of each of its 180 rooms were equipped with locks and in each room was installed Seth Fuller's annunciator, the forerunner of the telephone. The "Rotunda Boys", the original hotel bell-boys, were other "modern" features. Each room rented for two dollars and for the first time in American hotel history there were no fifty-cent rooms for *hoi polloi*. Unlike the City Hotel, the Tremont had no bar registration and was the first hotel to install clerks. This establishment was so successful that not only Europeans but other Americans copied its methods. The famous Astor House, New York, opened in 1836 under the operation of Dwight Boyden who had also managed the Tremont, was almost a replica, even to its location opposite a cemetery!

Some years after this, an enterprising hotel-keeper installed the first private bathroom in the New York Hotel, built in 1844. While hotels were still functioning with what we would now call mere essentials, someone decided that the decorative note had been overlooked. Therefore when the Saint Nicholas Hotel was built in 1853, the management spent a large sum of money to make this the first glittering American hostelry. Interior decorations included numerous mirrors, a vast array of cut glass and bronze objets d'art, and gilded furniture and fittings. The story is told of a visiting English comedian who was afraid to place his shoes in the hall for fear they might be returned gilded. Not to be outdone by this garish show, the old Fifth Avenue Hotel of New York opened in 1859 with 530 guest rooms, the largest hotel yet built.

In some, however, the feeding of the guests continued to be a foremost con-

[1] Based on an address by Arnold Shircliffe, at the opening luncheon meeting, and his menu exhibit at the American Dietetic Association annual meeting, Milwaukee, October 10–13, 1938.

sideration. In the Revere House of Boston, Paran Stevens, the host, donned a white apron, and daily, with his clerks, carved the meats that were served in the "Gent's Ordinary". The business of eating here, however, was accompanied by something new in the enjoyment of meals. From a convent in Spain, Mr. Stevens imported a barrel of toothpicks, each one having been whittled by hand on the small end and fringed on the larger. Incidentally, they were the first toothpicks to be seen in Boston and probably in the United States. As most dietitians know, the old Parker House, also of Boston, was the originator of the still popular Parker House rolls.

Inns and hotels were the centers of the country's social life, and many of them housed America's history makers. Lincoln made his home in the famous Briggs House of Chicago at the time he was nominated at the Wigwam. In the old Burnet Hotel of Cincinnati, it is said that Sherman planned his march to the sea. More recent history is touched upon when we learn that Calvin Coolidge lived for several years in a one dollar room in the Adams House of Boston. When he was elected governor of the state, however, it is said that his friends suggested he move into a two dollar room, more appropriate to his station in life. The Russian Revolution was responsible for the flight of Leon Bernstein, the Jewish journalist who had been living at the Broadway Central Hotel, New York City, at the time. According to Mr. Shircliffe, Mr. Bernstein was detained in Halifax and in order to facilitate his departure, he adopted the last name of the Broadway Central Hotel's manager, Herman Trotsky, and thereafter was known as Leon Trotsky.

Coal-Oil Johnny, a fabulous figure of the eighteen hundreds, made the old Girard Hotel famous when he bought the hotel for a day in order to discharge a supercilious clerk. He appeared again in the Continental Hotel of Philadelphia and because he could not read the menu in French, in disgust he ordered the waiter to bring him a thousand dollars' worth of ham and eggs.

Sports history was made in the Grand Central Hotel of New York, for it was here that the National Baseball League was organized in 1876. Aviation, too, brushed its wings on hotels, when Raymond Orteig of New York's old Brevoort Hotel offered the $25,000 prize which sponsored Lindbergh's epoch-making flight across the Atlantic Ocean in 1927.

Early hotels were the scenes of gay times and hearty eating and drinking. The What Cheer House, in the days of the Gold Rush, was a happy haven for roisterers and the home of gold prospectors who paid their bills in pocketsful of nuggets. The old Kirby House of Milwaukee inspired Mayor Abner to give each room a name rather than a number, the bridal suite being aptly designated "Paradise". In New York, the somewhat rowdy Marlboro Hotel was the scene of Anna Held's mythical milk bath, where it was said the invited reporters expressed their disappointment because the bath fluid was opaque. New York's old Waldorf, of Peacock Alley fame, was selected for the famous Bradley-Martin ball, attended by the original "Four Hundred". In this hotel, the first "skyscraper" and the first thousand-room hotel in America, princes, presidents and potentates, ca-

vorted and dined under the ministering guidance of the great maître d'hôtel, Oscar.

The housing of workers was the main and novel reason for the erection of the Park Avenue Hotel, New York, by A. T. Stewart, the famous merchant, and father of the Wanamaker department stores. He had planned it for the saleslades of his emporium but they, anticipating the future emancipation of women, refused to live there because of the many rules and regulations. Tragedy, too, marked hotels for their share. What was perhaps the greatest in the older hotel history in America, occurred in the Newhall of Milwaukee when a fire wiped out more than seventy-five lives on January 9, 1883.

The menus in Mr. Shircliffe's collection, some of which emanated from these hotels, are elaborate not only in design but in contents. Famous artists contributed to the lay-out and typography and countries near and far yielded their choicest foods, delicacies and wines, with which great chefs conspired to create culinary masterpieces. Poets, princes and politicians, and leaders in all walks of life are recorded in these menus of other days. The original names of many foreign foods, included in some of these early menus as rarities and great delicacies, have now come generally into almost daily usage; and the foods, once rare, are now readily available. Caviar, curry, mayonnaise, Edam, Camembert, and Roquefort cheese, anchovies, bouillabaisse, chili con carne, smörgäsbord, and spaghetti, are words for which there seems to be no equivalent in American speech.

Mr. Shircliffe's menus date back to 1740, at which time the bill of fare was called a "Bill of Particulars". Between the years 1740 and 1829, there were few such bills, but beginning with the opening of the Tremont Hotel, Mr. Shircliffe's collection contains at least one outstanding menu for nearly every year, and in some years as many as half a dozen. They have been assembled from nearly every state in the country, and almost all the important clubs, hotels and restaurants are represented. They are mute yet tangible evidence of happy events long past, and of periods when many of the now popular dishes were introduced in America.

History, again, is recorded in these menus through events such as the opening of the first railroads between the United States and Canada, the opening of the first Chicago Board of Trade and many of America's great hotels. They commemorate the introduction of the first dining cars in America, and the Pullman car service; the Lincoln Inaugural Ball; the entertaining of such notables as the Sultan of Turkey, the Prince of Wales, Prince Henry of Prussia; the ruler of Siam; an admiral of the Russian Navy; the Grand Duke Alexis of Russia, the Crown Prince of Sweden, Queen Lil of Hawaii, as well as many of America's presidents, educators, politicians and writers.

This collection was exhibited for the first time at the Milwaukee meeting of the American Dietetic Association. The menus were supplemented with contemporary pictures portraying the trends in manners and customs of the past two centuries.

In contrast to the elaborate dishes and numerous courses of these early menus, today's banquets offer light and almost frugal fare. Today, dainty and

decorative sandwiches have displaced the pigs' knuckles included on Mr. Shircliffe's afternoon tea menu of over a hundred years ago. Today, gargantuan banquets, gout and billowing female curves are outmoded. Instead of mighty meals, we have gargantuan hotels, luxurious beyond the fondest dreams of the early nineteenth century hotel-keepers.

Dietitians in the Service of Private and Public Mental Hospitals[1]

At a joint dinner meeting with Alma Bering, Sheppard and Enoch Pratt Hospital, Towson, Maryland, representing the private mental hospitals, and Grace Clark, Pontiac State Hospital, Pontiac, Michigan, chairman for the group in public mental hospitals, twenty-one dietitians from nine states were in attendance.

The group represented only a nucleus of the total number of dietitians now in the service of mental hospitals. Even so, the number of dietitians in the service of state institutions is few when compared with the total number of patients in these institutions. One dietitian is usually in charge of both the administrative and therapeutic work.

The chief differences between the private and public institutions is in the number of patients, the per capita food allowance and the personnel and help question. In the public hospital the working staff consists chiefly of patients; whereas in the private institution patients work in the dietary department, voluntarily, as part of the general therapeutic procedure. In the private hospital there is much more opportunity for individual work with the patients.

Most of the public and some of the private institutions have their own farms, which adds another food problem to the responsibilities of the dietitian—the canning and preserving of food. In state institutions this work is usually done by the patients under the supervision of the dietitian. In Illinois, the canning for all state institutions is done at the penitentiary. Institutions calculate the value of the food so produced, in various ways, sometimes basing such calculations on the daily market quotations. The close cooperation of both the dietitian and the person in charge of food production is essential in any successful canning program.

Cafeteria service has been attempted for mental patients and has proved successful in some states with groups of patients who are able to cope with the service.

Those who attended the meeting felt that an educational program might well be promoted that would demonstrate the need of trained dietitians in mental institutions. The American Dietetic Association with the assistance of affiliated state groups could do much in the furtherance of such work. The excellent results obtained by dietitians in some states could serve as a guide and example to those who are not employing dietitians. State boards could be given an opportunity to compare their food department results and costs with those of other states.

Salaries should be made more attractive so that competent people would be interested in positions in state institutions. Student dietitians might profitably devote some of their training period

[1] Report of dinner meeting, Milwaukee, Wisconsin, October 11, 1938.

to service in state hospitals so that they might overcome some of the prejudices that exist against such work and learn first-hand some of the problems of mass feeding in such institutions.

Nebraska is one of the several states which have placed dietitians in the service of state institutions in recent years. Winifred Yates was placed in charge of the food service in one of the state hospitals. After two years successful service she was called to the state headquarters to write up specifications for food purchasing. Here her need was felt so keenly that she was not returned to her former position, and four more dietitians were placed in the field—one in the food department of the state penitentiary. In this state the baking for five state institutions is carried on by the inmates of the penitentiary.

The Milwaukee County institutions, noted for their high management standards, have had for some time a dietitian representative on the executive staff so that all dietary problems may have due consideration and adequate standards be maintained.

Other problems which came up for discussion at this meeting concerned the work of dietitians in epileptic colonies and in state tubercular sanatoriums. Illinois reported the use of federal funds for research work and that manuals were being written for use in the state institutions. It was believed that it would be helpful if reports could be received from each state regarding the number of dietitians who now hold positions in state institutions and at the same time it might be determined which states have a central supervised service. The hope was expressed that a similar dinner session be arranged at the time of the annual meeting in Los Angeles in August 1939.—ALMA BERING, *Head Dietitian, Sheppard and Enoch Pratt Hospital, Towson, Maryland;* and ALICE E. JANÉ, *Spring Grove State Hospital, Catonsville, Maryland.*

CURRENT COMMENT

THE ADEQUACY OF THE 1000-CALORIE DIET[1]

At the time that this report was due, only eighteen direct replies had come to the committee. Later returns were in line with the eighteen studied in detail.

Of the eighteen direct replies, sixteen use the 1000-calorie diet and two only occasionally.

Of the eighteen direct replies, seven hospitals routinely supply supplementary sources of vitamins while in the hospital, and six supply them "sometimes."

Out of the eighteen direct replies, nine hospitals routinely instruct their patients as to the preparation of food to conserve vitamins and minerals.

Six of the eighteen stated that the patients were free from colds during the reduction diets and all six of these consistently used vitamin concentrates to supplement the diet. Three of those who claimed that their impression was that there was a greater tendency to colds, did not use vitamin concentrates while on the reduction diet.

[1] Committee report presented before the Diet Therapy Section, American Dietetic Association, Milwaukee, October 10, 1938.

Ten hospitals used protein at a level of one or more grams per kilogram of body weight.

Five claim to supply an adequate 1000-calorie diet with no added vitamin concentrates.

Six claim to supply an adequate 1000-calorie diet with added vitamin concentrates.

Sixteen of the eighteen direct replies enclosed sample diets. They all included two servings of fruits, three servings of vegetables and from three to four ounces of lean meat. There were variations in content as to milk, eggs, butter and bread. The milk varied from one to three glasses; the eggs varied from none to two; the butter varied from one to four teaspoons and the whole grain bread from one-half to three slices.

Setting up the average source of minerals and vitamins as listed on these diets, the 1000 calories were distributed as follows:

In making these computations, the mineral and vitamin values were obtained from Rose's third edition of *The Foundations of Nutrition.*

The figures for fruit were based on 18 items commonly used. The vitamin A and C value of apricots was not averaged in with the other 17 items because of the small consumption. The vitamin C value of rhubarb was only listed in the raw state and was not included in computing the average.

The figures for 3, 6 and 9 per cent vegetables were based on 21 items. The vitamin A value of kale was omitted on account of its infrequent use. The vitamin C values of broccoli and Brussels sprouts, carrots and green peppers were omitted because of no values for the cooked product.

The figures for the starchy vegetables were based on 5 items. The vitamin A value of Hubbard squash was omitted in computing the average figures because of its sectional use.

	SERVINGS	Ca	P	Fe	VIT. A UNITS	VIT. B_1 UNITS	VIT. C UNITS	VIT. G UNITS
		gm.	*gm.*	*mg.*				
80 calories of fruit	2	0.0414	0.0352	0.85	340	31	43	20
80 calories of starchy vegetables	1	0.0184	0.0748	1.10	210	60	13	34
50 calories of 3, 6 & 9% vegetables	2	0.0782	0.0748	1.35	2500	41	41	66
300 calories of lean meat	2	0.0276	0.3960	5.7	120	96	—	192
160 calories of whole grain bread	2 sl.	0.322	0.968	1.05	—	98	—	22
130 calories of butter	3 tsp.	—	—	—	500	—	—	—
120 calories of milk (skimmed)	2 gl.	0.3979	0.3168	0.85	—	37	—	106
80 calories of egg	1	0.0322	0.1188	1.55	1070	31	—	78
1000 calories, total in gm., mg. and units		0.9177	1.9844	12.45	4740	394	97	518

Ca gm.—0.91.
P gm.—1.98.
Fe mg.—12.45.
Vitamin A 4740 Sherman-Munsell units.
Vitamin B 394 Sherman-Chase units.
Vitamin C 97 Sherman-La Mer units.
Vitamin G 518 Sherman-Bourquin units.

It is clearly evident that only those diets in which an egg is included and where the commonly selected vegetables are leafy ones that the total of 4740 Sherman units of vitamin A can be reached. It is also to be considered that when Melba toast is made from white bread, the total vitamin B units of the diet would materially drop. If whole grained cereals are used in the 1000-calorie diet, the patient will have enough vitamin B units to cover the requirement when the patient chooses the root vegetables. Because of the variable amount of vitamin A in whole milk and butter during the winter and summer months, and because of the past food habits of the patient in choosing the vegetables, the total amounts of vitamin A might not reach more than 2000 units.

Suggestions for Improvement

All of the present diets that have been surveyed, totaling 1000 calories or less, should be supplemented with vitamin concentrates of A, B, and G (B_2). If milk is not used, calcium in some form must be added.

Recommendations for Further Study

1. Are any 1000-calorie diets adequate without additional vitamin concentrates?

2. Should a higher protein content (80–85 gms.) be urged so as to give: (a) greater satisfaction at least to the male patient; (b) less hunger pangs because of longer stay in the stomach; (c) a higher rate of metabolism due to specific dynamic action of protein foodstuffs.

3. Would an unequal division of the allowed foodstuffs be advisable *i.e.*: (a) giving less food at breakfast time when the urge to follow the diet is at its height; (b) allowing more nearly the normal array of foods at the noon and night meal.

4. Should we set up a list of definite instructions for conserving minerals and vitamins which could be used in both hospital and the home?—ELSIE WILSON MARTIN, *Duke University, Durham, N. C.*

THE ADVISORY COUNCIL ON NUTRITION OF THE COMMONWEALTH OF AUSTRALIA

The Health Organisation of the League of Nations through its Technical Commission has not only issued much helpful literature on the problem of nutrition on an international scale, but has stimulated many countries to make both intensive and extensive surveys of the nutritional status of their own people.

Australia has been very active in efforts to enable the government to be advised on the present state of nutrition and "the nature of any evidence that the Australian people are in any degree undernourished or that their diet is improperly balanced or improperly prepared". The reports issued to date cover: (a) A survey of household dietaries in the four capital cities where medical schools are established—Sydney, Melbourne, Brisbane and Adelaide; (b) investigations into the composition of food in various parts of Australia; and (c) examination of children in remote inland districts.

The Family Food Survey. The original aim of having 100 families, in each of the four centers mentioned, record their food purchases for a period of twelve months, could not be carried out despite earnest work on the part of the press, child welfare centers and schools to encourage

the mothers to fill out the food booklets issued for twenty-eight day periods. Accordingly, the Council accepted a sequence of families, adding new households as former ones ceased to keep records, in order to obtain a representative sample of the food purchased in the community for a twelve-month period. The statistical compilation of these booklets, including 1029 different articles of food, was not completed in the reports covered under this review. It had been decided that 300 booklets each would be analyzed for Sydney, Melbourne and Brisbane, and 1000 in Adelaide.

Food Analysis Investigation. To compile accurately the values of foods recorded in the booklets, it was necessary to study the chemical composition of foods in various parts of Australia. The Fifth Report of the Council (55 pages) issued in February 1938 is an exhaustive study made by the biochemist, Dr. Geoffrey Bourne, and Dr. H. K. Lee, professor of physiology, University of Queensland, on 1172 food items including 40 varieties of bread, 183 kinds of cakes, pastries, etc., 114 of biscuits, 112 various cuts of meat, 87 varieties of fish and 96 varieties of sweets. Up to the time of this investigation only American and European food analysis figures were available. While the variations in figures in different countries for meats, vegetables and fruits were not found to be large, the cakes and biscuits used are so different in composition that Australian figures had been used for these products.

Nutritional Surveys of Inland Australia. In western Queensland, 1399 children of all ages were examined, of whom 18.8 per cent had unsatisfactory nutrition. In the group of 263 malnourished children, 6.9 per cent had nutritional anemia, and 8.2 per cent of the entire child population were diagnosed as rachitic. The investigators concluded that the diets of children in this area were definitely deficient in mineral salts.

In northwestern New South Wales, a total of 736 infants and children of all ages up to fifteen were examined of whom 23.7 per cent had unsatisfactory nutrition. A total of 8.7 per cent of the total child population had rickets, with the highest incidence in the smaller and more remote settlements. Not a single case of border-line scurvy was revealed. Investigators suggested that the large amount of potatoes and pumpkin eaten by the children in these areas was responsible for the absence of scurvy.

In the Victorian Mallee, where farming is the principal occupation, 1249 school and preschool children were examined. Malnutrition was detected in 13.3 per cent. Hemoglobin estimations made on 1132 children showed that 4.3 per cent had anemia.

Dietitians and nutritionists conducting health or dietary surveys will find the reports issued to date of particular interest in regard to the Council's educational propaganda on the use of protective foods; likewise, the detailed methods of conducting the physical examinations for children and of making the food analyses.—ANNA DEPLANTER BOWES, *Director, Nutrition Education, Philadelphia Child Health Society.*

BOOK REVIEWS

Handbook of Food Manufacture. By Dr. F. Fiene and Saul Blumenthal, B.S. New York: Chemical Publishing Co. of New York, Inc., 1938, pp. 603. Price $6.00.

There are many books on foods, food chemistry and a few on the manufacturing of foods. This new book is perhaps the most simple yet published that is devoted to the practical aspects of the food industry. It includes a collection of practical, tested, commercial formulae, and analyses of raw materials. Actual working formulae for making hundreds of food products have been assembled. While the book was written for the manufacturer, chemist, food buyer and broker, concerned with the baking, beverage, confectionery, condiment, canning, preserving, and allied food industries, the contents should be of interest to the dietitian engaged in large scale food production.

The chapter contents cover the description of raw materials, chemicals, oils, spices, etc., with details regarding adulterations and information on the different grades of flour, Italian pastes, sugars and so on. The chapter on milk and its products includes information on dry milk powder, sterilization of milk, acidophilus milk, soya bean vegetable milk, chocolate flavored milks, and practically all of the varieties of cheese. The chapter on cacao and chocolate products gives full details regarding the different types of cacao beans, the manufacture of chocolate and its uses. Brief information is included on various teas and coffees.

Specifications and general descriptions of grades for canned fruits and vegetables and dried fruits appear in another chapter. That on fountain supplies, crushed fruits and flavors is unusually extensive, covering over 100 of the book's 563 pages of text.

The chapter on fruits and fruit juices covers the manufacture of fruit juices: the filtering, clearing and methods of preservation. Included are yields from the various types of fruit and the state regulations with regard to the amount of permitted benzoate of soda allowed in fruit juices. Under jams, jellies, preserves, etc., directions are included for large quantity production, methods of preparing liquid pectin and determining the jellying power of fruit juice extractions, and chemical composition of fruits, juices, cold-pack fruits, fruit jellies and preserves, as determined by the Shirley Laboratories of New York City. The brining of cherries, citron and so on, the preparation of maraschino cherries, gelatin desserts and pudding powders, bakery products, specialty foods, prepared cake mixes and pie fillings, ices, fillings, fondants, and marshmallow paste are other included data; likewise chapters on breadmaking, baking powders, mayonnaise, sauces, condiments; nuts, including grades; and fish—salt water and the various types of fresh water fish, as well as salt fish, shell, domestic canned and imported canned and smoked fish.

The brief description of "health foods" can readily be dispensed with by the dietitian, except possibly the directions for the making of "sugarless" fruit jams. Under miscellaneous, methods are included for preventing caking of powdered food products; data concerning various washing solutions and common food adulterants; analyses and tests for oils, vinegar, eggs, gelatin, sugars, sugar-boiling, spices, essential oils, coffee, cocoa, tea, flour; tests for heavy metals, aluminum, boric acid and so on; methods of testing water qualitatively; and other analyses and tests too numerous for mention.

The appendix includes weights and measures, conversion tables, boiling point and specific gravity of various liquids; United States government definitions and standards for food products, and common and chemical names of various materials. For full measure, the authors include abbreviations and an extensive index.

Synopsis of Clinical Laboratory Methods. By W. E. Bray, B.A., M.D. 2d. ed. St. Louis: The C. V. Mosby Company, 1938. Price $4.50.

This second edition is written in response to the advances made in clinical laboratory methods within the last two years. New methods have been introduced and older procedures standardized, while adhering as closely as possible to the object and form of the original edition.

The chapters on urinalysis, hematology, blood chemistry and gastric analysis are of especial interest to the dietitian, as well as those on water and milk examinations, and basal metab-

olism and allergy tests. Among the procedures that have been added to this new edition are: serum phosphatase determination; the diffraction method for measuring erythrocytes; and vitamin C titration. Numerous illustrations and several color plates are helpful supplements to the text.

Our Cereals: A Nutrition Unit for the Fourth, Fifth and Sixth Grades of the Elementary School. By Mary S. Rose and Bertlyn Bosley, with the cooperation of Dorothy Engelmann and Eloise Cofer. New York City: Bureau of Publications, Teachers College, Columbia University. Price 35 cents.

This little booklet meets a serious need, that of making the consumption of the right kind of cereals of import to the school child. The world raises more cereals than any other kind of food. Even in the United States, about one-third of the total calories consumed come from the cereal grains. On the lower income levels it is highly important that at least one-third of the total calories be in the form of cereals so that money will be available for the more expensive and essential foods such as milk, fruits and vegetables. Further than this, it is of the utmost importance that children be instructed so that they may make wise selections in cereals.

Mrs. Rose and her co-workers were among the first to realize that only through proper educational means can the science of nutrition be effectively applied to everyday living. Children begin very early to make choices and form rather fixed food habits. Recognizing this, Mrs. Rose points out that the schools have a new opportunity "already realized by many, for the improvement of the health of the nation through carefully planned, consistent and continuous education in the elementary and junior high school."

The first lessons in this series are planned to arouse the children's interest by letting them distinguish between the various grains and by giving them an opportunity to separate one or more kinds of grains into the several structural parts. They then prepare and taste at least one of the cereals, after which they study the relative value in the diet of the whole grain cereal as compared with one made from the "starch" or endosperm. For such demonstration, use is made of the white rat; one of a pair being placed, for example, on dark farina, another on white. Comparative costs of cereals are also demonstrated, all of which teaches the child that a definite relationship exists between food and health, and that intelligent choice yields a valuable return.

This plan for a nutrition unit, which may be conducted without special equipment, will be of indispensable assistance to all who are concerned with the nutrition education of the child.

Recent publications of the Bureau of Home Economics, United States Department of Agriculture.

Among the popular publications for the use of the homemaker, all of which are on the free list on application to the Superintendent of Documents of the Government Printing Office, Washington, D. C., are the following: *Dry Skim Milk, its Keeping Qualities, Uses and Storage; and Soybeans for the Table,* including food value and recipes.

Technical reports of research, printed only in limited quantity, are sold by the Superintendent of Documents as follows: *Factors to be Considered in Preparing Minimum-Wage Budgets for Women;* and *Food Consumption of Children at the National Child Reseach Center,* price, each, ten cents. *Outlook for Farm Family Living, 1939; Study of Waste and Preparation and the Cooking of Fresh Vegetables; Proposed Minimum Requirements of 3 Types of Drapery Fabrics;* and *Report of the Chief of the Bureau of Home Economics, 1938,* are available for five cents each.

101 Popular Sauces and Gravies. By Alice Easton. Stamford, Conn.: The Dahl's, 1938. Price 50 cents.

As its title indicates, this booklet gives brief and simplified directions for preparing sauces and gravies in quantity. Complicated sauces originating in France have been adapted for domestic use. Included are suggestions for the appropriate use of the various sauces and gravies.

CURRENT LITERATURE

American Journal of Digestive Diseases

Vol. 5, November 1938

*The endocrines in relation to the gastro-intestinal tract J. B. Collip.—p. 587.

*Treatment of the hemorrhagic tendency in jaundice; with special reference to vitamin K. A. M. Snell, H. R. Butt and A. E. Osterberg.—p. 590.

*Suggestions for a new science. Editorial.—p. 627.

ENDOCRINES. The thyroid hormone has a peculiar effect upon calcium metabolism. Exhibition of this hormone may cause a great increase in the elimination of calcium salts through the bowel. This is in sharp contrast to the effect of the parathyroid hormone which causes a great increase in calcium excretion by way of the kidney.

HEMORRHAGIC JAUNDICE. Oral administration of a fat soluble vitamin and bile salts will increase the concentration of prothrombin and thereby reduce the clotting time of the blood. The vitamin alone will not accomplish this result if bile is excluded from the intestine. The inadequate food intake which is common to most jaundiced patients leads to a depletion of the amount of vitamin K in the digestive tract. In the presence of injury of the liver larger amounts of vitamin K are required to achieve the desired effect.

SUGGESTIONS FOR A NEW SCIENCE. The art of treating certain foods like beans and cabbage so that they will lose much or all of their harmfulness to many sensitive men and women promises a new field for research. Cooking greatly improves the digestibility of a number of foods by breaking up the cellulose and altering poisonous substances. Search should be made for ways of "denaturing" the proteins and other substances in foods which injure so many allergic persons.

American Journal of Diseases of Children

Vol. 56, October 1938

*Effect of vitamin B_1 on the iron retention of a normal infant. F. W. Schlutz.—p. 734.

*Effect of a milk supplement on the physical status of institutional children. III. Progress of dental caries. L. J. Roberts, S. Englebrecht, R. Blair, W. Williams and M. Scott.—p. 805.

VITAMIN B_1 AND IRON RETENTION. The influence of vitamin B_1 on the iron metabolism of a normal child was studied at three levels of iron intake. The average retention of iron was lower during periods of high vitamin B_1 intake than during the control periods. Variations in the retention with a given diet were correlated with the amount of food consumed rather than with the intake of iron. Calcium retention was not affected by the higher level of vitamin B_1.

DENTAL CARIES. The effect of a milk supplement, with and without vitamin D, on the development and spread of dental caries was observed for 90 children in an institution over a calendar year. One group remained as controls; each child in the other two groups received daily the equivalent of a pint of milk, one having it as irradiated evaporated and the other as nonirradiated evaporated milk. All children showed extremely progressive caries.

American Journal of Public Health

Vol. 28, November 1938

*Administrative control of food handlers and places dispensing food and drinks. K. Marden, J. M. Curry, L. J. Horowitz and B. G. Horning.—p. 1277.

DISPENSING FOOD AND DRINKS. Laboratory examinations have shown that a large percentage of drinking glasses used at places dispensing food and drinks were not adequately disinfected. Frequently they were contaminated with bacteria from the human upper respiratory and gastro-intestinal tracts. Legislation and disinfection of equipment are of little value unless followed by an educational program for the instruction of both food handlers and the public in the correct principles of food handling.

Annals of Internal Medicine

Vol. 12, November 1938

*The treatment of liver disease. A. M. Snell.—p. 592.

LIVER DISEASE. The principal requirements in the treatment of parenchymatous hepatic disease appear to be the maintenance of optimal conditions to allow for regeneration and repair of the parenchyma of the liver. The various special diets high in carbohydrate, vitamin

concentrates, and liver extract parenterally are valuable. The treatment of hepatic insufficiency depends chiefly on the maintenance of a high intake of fluid with ample supplies of glucose. The use of bile, bile salts, and vitamin K in treating this condition is discussed.

Food Research

Vol. 3, September-October 1938

*Sources of lead in maple syrup and a method for its removal. C. Willits and C. Tressler, Jr.—p. 449.
*Vitamin values of garden-type peas preserved by frozen-pack method. 1. Ascorbic acid (vitamin C). E. Todhunter and B. Sparling.—p. 489.
Variations in sampling beef and pork roasts for press-fluid investigations. A. Child and E. Moyer.—p. 505.
Mineral constituents of honey. H. Schuette and R. Triller.—p. 543.
Nutritive value for growth of some proteins of fishery products. W. Lanham, Jr. and J. Lemon.—p. 549.

LEAD IN MAPLE SYRUP. The old type wooden sap buckets, some of which are now in use, were painted to protect them from weathering. The older tin-plated buckets were so heavily coated with tin that they are for the most part in excellent condition today. Later, however, only a very thin tin plate was used and when worn through, painting was resorted to in order to prevent rusting. It is stated that of 500 samples of maple syrup produced in New York State in the customary manner and without thought of lead contamination, "only 80 contained an amount of lead which would be considered significant". Various methods are outlined for removing or reducing the lead content of maple syrup. It is suggested that the chief sources of lead in maple syrup, that is, the use of lead paint, lead-tin alloy and lead-tin solder in making water-tight joints be avoided, and that if lead contamination exists it can be removed by additions of 10% or more of total weight as skimmed or whole milk, followed by heating and filtration.

VITAMIN VALUES OF COMMERCIALLY FROZEN PEAS. If thawed and allowed to stand exposed to the air at room temperature for any length of time, there is a rapid loss of ascorbic acid, and ordinary ice-box temperatures over a 24-hour period permits about the same loss as when the peas are held at room temperature for one hour. Smaller peas were found to be higher in ascorbic acid per unit of weight than larger peas of the same variety; the seed coat was also found to contain more ascorbic acid per gram, than the cotyledon. Thawed peas removed from the original hermetically sealed containers and allowed to stand at room temperature lost 16% of their ascorbic acid in 30 minutes, and 27% in one hour; 25% was lost on standing 24 hours in a refrigerator at 4.5°C. (40°F.)

Hospitals

Vol. 12, November 1938

*Significant nutritional developments. J. H. Husser.—p. 31.
Modern dishwashing. E. W. Atkerson.—p. 120.

SIGNIFICANT NUTRITIONAL DEVELOPMENTS. There is a condition of hypovitaminosis which is not very generally recognized. In certain disease states such as cirrhosis of the liver, even optimal requirements of vitamins are not sufficient when the human mechanism is unable to absorb, or loses too rapidly, or, by some other mechanism, cannot make use of these particular substances.

The International Nursing Review

Vol. 12, October 1938

*Erfolg und Misserfolg in der Ernährung des Säuglings und Kleinkindes. E. Lorenz.—p. 356.

FEEDING INFANTS AND YOUNG CHILDREN. Outlines the dangers of quantitative and qualitative undernourishment and the reverse, over-feeding with regard to total calories. Discusses methods of milk medication and supplements to the infant's diet. Outlines therapeutic diet treatment of sick infants, chiefly methods of counteracting diarrhea. Recognizes the apple diet as "one of the greatest advances made in the sphere of dietary treatment of diarrhea in children." Includes two diet sheets for the feeding of young children which have been worked out, based upon experiments in Germany. In the diet of a child of 2, white bread is specified and an approximate total of 300 gm. of milk, 10 gm. of butter, and 20 gm. of minced meat. Egg is not included in the diet. While "100 grams of fruit in season" is specified, it does not state what type of fruit. Among other suggestions at variance with accepted procedures in this country is that "if very hot or thirsty the child can be given a little tea without sugar".

Journal of Biological Chemistry

Vol. 126, November 1938

*The effect of supplementary lysine, methionine, and cystine on the production of fatty livers by high fat diets containing gliadin. H. F. Tucker and H. C. Eckstein.—p. 117.

*Anemia studies with dogs. V. R. Potter, C. A. Elvehjem and E. B. Hart.—p. 155.

*A new vitamin D in cod liver oil. C. E. Bills, O. N. Massengale, K. C. D. Hickman and E. LeB. Gray.—p. 241.

*Further studies on the calcium content of the body as influenced by that of the food. C. S. Lanford and H. C. Sherman.—p. 381.

AMINO ACIDS AND LIVER FAT. The total lipid content of rat livers increased from 7.3% to 33.8% when the gliadin content of a high fat diet (40% lard) was decreased from 18 to 5%. The addition of lysine to the high fat diet had little effect on the fat content of rat livers. The total lipid content of rat livers was 77.5% less when a 5% gliadin diet containing 40% lard was supplemented with methionine, than when the methionine was omitted. The addition of cystine had little effect on the total lipid content of rat livers.

ANEMIA STUDIES WITH DOGS. Anemic dogs responded poorly to a daily dose of 30 mg. of iron alone, but when 4 mg. of copper per day were given, the hemoglobin regeneration proceeded very rapidly. Blood copper determinations showed that an increase in blood copper is associated with accelerated hematopoiesis. Dogs were maintained for over a year in a state of excellent nutrition on a diet of whole milk with additional vitamin A and vitamin D, with iron or copper, or both, fed during periods of therapy.

NEW VITAMIN D. The most volatile of several vitamins D which occur in cod liver oil was assayed with rats and chickens. Per rat unit, it was from one-half to one-fourth as effective for chickens as the total vitamin D of the oil. The assays substantiate the evidence, previously obtained from molecular distillations, that cod liver oil contains several vitamins D.

EFFECT OF FOOD ON BODY CALCIUM. The effects of 3- and 4-fold enrichments in the calcium content of a diet, in which at least minimal adequacy was established by its support of normal nutrition through 43 generations of rats, were studied in the offspring of parallel experimental animals. Offspring of the families on the higher levels of calcium intake were found to have attained at 1 month of age a percentage of body calcium achieved on the original diet only at 5 or 6 months. During the period of rapid growth and development, the degree of calcification on the liberal intakes of calcium exceeded that on the lower dietary level by one-quarter to one-half; and at full maturity there was a presumably permanent difference of 5 and 10%. Experiments still in progress indicate that this higher calcium content is advantageous throughout life.

Journal of Nutrition

Vol. 16, November 1938

*Does fat in the diet affect the thyroid? R. E. Remington.—p. 417.

*The availability of iron in the various foods. L. Ascham, M. Speirs and D. Maddox.—p. 425.

*A quantitative study, by means of spectrographic analysis, of copper in nutrition. F. I. Scoular.—p. 437.

*The histopathology of neuromalacia and "curled toe" paralysis in the chick fed low riboflavin diets. P. H. Phillips and R. W. Engel.—p. 451.

EFFECT OF FAT ON THYROID. Addition of saturated or unsaturated fat up to 13.6% of the weight or 30% of the caloric value of an iodine deficient diet, does not aggravate the hyperplasia of the thyroid produced by iodine deficiency. When sodium iodide is added to the diet, the addition of fat is still without effect on the thyroid.

AVAILABLE IRON. A greater hemoglobin gain was obtained in nutritionally anemic rats with the use of canned leaves, plus the cooking liquid of turnip greens and collards, than with the dried forms of these greens. The iron of the canned turnip green leaves was less available than that of the dried greens. The foods studied fall into the following descending order in respect to the availability of their iron for the regeneration of hemoglobin: black-eyed peas and spinach, turnip greens and kale, collards and mustard, head lettuce and finally, tender green and leaf lettuce. In these foods the ionizable iron and the iron available for hemoglobin synthesis were not identical.

COPPER RETENTION IN CHILDREN. Thirty-five copper balance studies were made with 3 normal preschool age boys. The daily urinary copper

excretion was fairly constant for a given child, averaging 4% of the ingested copper. Fifteen to 58% of the ingested copper was excreted by way of the alimentary tract. The lowest copper retentions occurred with the lowest copper intakes, while the highest retention, 0.058 mg., was obtained with an ingestion which was close to the maximum level of copper consumed. The copper requirement of boys from 3 to 6 years of age seems to be between 0.053 and 0.085 mg. per kilogram of weight.

RIBOFLAVIN. Riboflavin is necessary in the growing chick for the normal function and maintenance of the nervous system, particularly the main peripheral nerve trunks, and it may be specifically associated with myelin metabolism.

Journal of the American Dental Association and Dental Cosmos

Vol. 25, November 1938

*Relation of diet to oral health. M. Koehne.—p. 1767.

DIET ANC ORAL HEALTH. The nutritional adequacy of the diet is of fundamental importance from the prenatal period through adolescence, in the formation of a sound, healthy body and of well formed and well enameled teeth. The theory that food intake affects the integrity of the erupted tooth chiefly through making conditions possible or impossible for aciduric micro-organisms to infest the mouth and produce acid on protected tooth surfaces, seems to be the only logical explanation for many known facts about the occurrence and unusual nature of dental caries. A reduction in the concentrated sweets in the diet to a minimum would probably reduce the incidence of caries among the civilized population in the world.

Journal of the American Medical Association

Vol. 111, October 29, 1938

*The treatment of rheumatoid arthritis with large doses of vitamin D. N. R. Abrams and W. Bauer.—p. 1632.
*Vitamin C in the tonsils and blood of certain children. Editorial.—p. 1660.

Vol. 111, November 5, 1938

*Nutritional deficiency and the nervous system. G. C. Shattuck.—p. 179.
*Human requirements of vitamin C. S. L. Smith.—p. 1753.

Vol. 111, November 12, 1938

*Normal nutrition. Editorial.—p. 1846.
Dental caries in siblings. Current comment.—p. 1848.

Vol. 111, November 19, 1938

*Treatment of toxemias of pregnancy. F. L. McPhail.—p. 1894.
*Relation between blood plasma proteins and toxemias of pregnancy. E. F. Dodge and T. T. Frost.—p. 1898.
*Sodium chloride tolerance in chronic nephritis. H. H. Barker and R. Robinson.—p. 1907.

Vol. 111, November 26, 1938

*Protracted moderate scurvy. Editorial.—p. 2019.
*Bone marrow in aplastic anemia. Editorial.—p. 2020.
*Typhoid Mary dies. Current comment.—p. 2020.

RHEUMATOID ARTHRITIS. The administration of massive doses of vitamin D in rheumatoid arthritis is of little or no value in altering the course of the disease. Only 5 of the 18 patients gained weight. Subjective improvement lasting throughout the period of therapy was observed in 8 cases.

VITAMIN C IN TONSILS AND BLOOD. Streptococci are less likely to be found in tonsils when the vitamin C values of the blood are high. The daily ingestion of a reasonable amount of orange juice does not assure a high level of vitamin C in the blood. Generous amounts of vitamin C taken daily in the form of fruit juices does produce uniformly high vitamin C blood values.

NUTRITIONAL DEFICIENCY. The lesions of the nervous system which are common in beriberi, pellagra and polyneuritis are traceable to deficiency of diet or to conditions that interfere with utilization of factors contained in the food which has been ingested. Neurologic lesions caused essentially by deficiency are usually traceable to lack of part or parts of the vitamin B complex or of something contained in liver. Many neurologic syndromes which have not been attributed to deficiency are likely to be so regarded in the future.

VITAMIN C REQUIREMENTS. Three levels of vitamin C requirement may be considered in terms of the minimum quantities of ascorbic acid required: (1) to prevent the slightest decrease in capillary resistance; (2) to maintain uniform excretion after a depletion period, and (3) to maintain the tissues in a state of satura-

tion as determined by various modifications of the test dose method. Values of about 20 mg. daily for infants and from 50 to 60 mg. for adults may be considered as tentative estimates for the middle or barely adequate consumption level, with but little margin of safety or allowance for individual variations in requirements. Requirements have also been estimated in terms of body weight.

NORMAL NUTRITION. The nature of the dietary reflects itself in the manner of life and in the level of health of the people. The physique is conditioned by the adequacy of the diet. Deficiencies of vitamin D and of calcium are more frequent than are those of any other nutritional elements. Such deficiencies are of great importance in the etiology of dental caries. Balanced nutrition must be discussed in terms of milk, meat, potatoes, carrots, oranges or cod liver oil if the average patient is to understand it.

TOXEMIAS OF PREGNANCY. The toxemias of pregnancy occur in women with some previous impairment of renal function. This impairment leads to a gradual retention of urinary waste and electrolyte. Retention of urinary solids leads to dehydration of all the cells of the body and the fetus. Dehydration alters the function of the cells and accounts for metabolic changes in the various organs of the body. A diet yielding an alkaline ash leads to retention of alkaline ions and the development of cellular dehydration in the presence of edema. A diet high in acid ash leads to retention of acid ions with general dehydration of all cells. The toxemias may be prevented by the ingestion of large amounts of fluid and a neutral diet low in sodium.

BLOOD PROTEINS AND TOXEMIAS. In pregnant women the blood plasma albumin is decreased below the normal. Toxemias of pregnancy uncomplicated by organic disease are associated with a significant decrease of plasma albumin and a questionable increase of the globulin. Pregnancy without signs of toxemia and a diet deficient in protein cause a decrease in plasma albumin. An increased intake of protein in cases of mild toxemia causes an alleviation of objective and subjective symptoms and signs and is well tolerated by the patient.

CHRONIC NEPHRITIS. Clinical and metabolic studies of 15 selected cases of advanced renal disease have shown marked elevations of blood pressure, decreases of renal function and associated symptoms in 9 cases whenever sodium chloride was ingested. The many sources of sodium chloride in common foods renders true restriction of this substance very difficult. Considerable comfort and security may be gained for the occasional patient by giving potassium chloride as a salt substitute.

PROTRACTED MODERATE SCURVY. The quantity of vitamin C which protects the organism against scurvy may not be sufficient for optimal health and growth, because scurvy is a late sign of vitamin C deficiency. Accurate visualization of the pathologic changes in the bones and cartilege which may result from a protracted milk deficiency of vitamin C for children and adults has been accomplished. Scurvy inhibits the formation of new bone more than it speeds up bone absorption.

BONE MARROW IN ANEMIA. In aplastic anemia there is a failure of the normal process of maturation of the red cell. This abnormality differs from that in pernicious anemia, as liver therapy does not favorably affect it.

TYPHOID MARY DIES. "Typhoid Mary" was a cook whose employment was almost invariably accompanied by an outbreak of typhoid. She was known to have caused at least 10 outbreaks of typhoid with a total of 51 cases. From 1915 until her demise she was held by the New York Department of Health in the Riverside Hospital. Her stools were constantly used in the culture of typhoid bacilli.

Lancet

Vol. 235, November 12, 1938

*Diet in pregnancy. Annotation.—p. 1126.

DIET IN PREGNANCY. A survey of the food intake of pregnant women under various economic circumstances showed the intake of total calories and of fat and carbohydrate to be little affected by income. Protein, calcium, phosphorus, iron, and vitamin B_1 rose steadily with income. The authors suggest a daily intake of 1.5 gm. of calcium, 2 gm. of phosphorus and from 12 to 20 mg. of iron during pregnancy.

Military Surgeon

Vol. 83, November 1938

*Peptic ulcer and the larostidin treatment. M. M. Benedict.—p. 401.

PEPTIC ULCER AND LAROSTIDIN TREATMENT. The parenteral administration of histidine monohydrochloride in 132 cases of gastrointestinal disorders was followed by rapid remission of clinical symptoms and radiologic evidence of improvement. Regulation of the diet and mode of living need not be so strict as with other types of treatment. A reasonable diet and avoidance of undue mental and physical exertion should be observed. The prompt improvement permits the patient to become ambulant early in the treatment. Even the incidence of recurrence was reduced in cases of peptic ulcer. In tuberculous enterocolitis, the parenteral administration of histidine has been followed by rapid remission of diarrhea and spastic abdominal pain. The general condition and the appetite improves. Case records of 4 patients are reviewed in detail.

Minnesota Medicine

Vol. 21, November 1938

*Nutrition in pregnancy. R. J. Moe.—p. 779.

NUTRITION IN PREGNANCY. The diet of the expectant mother should include a quart of whole milk daily, to furnish the necessary calcium and phosphorus as well as "good" protein and vitamins. A generous helping of meat, eggs and cheese will furnish valuable protein and minerals. Small doses of cod liver oil are of definite value during the winter and spring months. A woman of normal weight is expected to gain from 25 to 30 pounds during pregnancy. Excessive gains are dangerous.

Ohio State Medical Journal

Vol. 34, November 1938

*Chronic gastritis: Present day status. L. Schiff and S. Goodman.—p. 1220.

CHRONIC GASTRITIS. Dietary indiscretions, poor dental hygiene, improper mastication and bolting of food, ingestion of very hot or very cold foods and excess of tobacco and condiments may produce irritation of the gastric mucosa. Alcohol seems an important chemical irritant. The diet should be bland with frequent small feedings.

Public Health Reports

Vol. 53, November 111, 1938

*The incidence and future expectancy of mental disease. H. F. Dorn.—p. 1991.

MENTAL DISEASE. The incidence of mental disease has not been increasing as rapidly as commonly supposed. Owing to the increasing proportion of the population in the older age groups, an increase in the number of admissions to mental hospitals is expected in the future. Rates of mental disease are highest at the older ages.

Southern Medical Journal

Vol. 31, November 1938

*Treatment of pellagra with nicotinic acid: observations in 45 cases. V. P. Sydenstricker, H. L. Schmidt, M. C. Fulton, J. S. New and L. E. Geeslin.—p. 1155.

PELLAGRA. Forty-five patients with pellagra have been treated with nicotinic acid in varying amounts with uniformly excellent effect on the clinical manifestations of the disease. Glossitis, stomatitis, diarrhea and mental symptoms were cured rapidly, appetite returned, often on the second day of treatment. Neuritis required the addition of vitamin B_1 for cure. Secretion of free hydrochloric acid in the gastric contents was stimulated by nicotinic acid. The usual amount of nicotinic acid necessary for cure was 600 mg. repeated on three successive days. For maintenance 100 mg. was required. Since many pellagrins suffer from multiple avitaminosis, accessory therapeutic measures are often necessary.

INSTITUTION MANAGEMENT

The American Restaurant Magazine

Vol. 21, November 1938

*Cranberries. C. R. Fellers, P. D. Isham and W. B. Esselen.—p. 30.

*Pumpkin is the pie. M. B. Strauss.—p. 31.

*Let's talk turkey—today and tomorrow. L. D. Freeman.—p. 32.

A merchandising age. B. Osborne.—p. 34.

*The new restaurant story. Horwarth and Horwath.—p. 38.

CRANBERRIES. A four-year research study carried on at Massachusetts State College, Amherst, showed the nutritive value of cranberries to be high because their tart, astringent flavor and rich color stimulates flow of gastric juices. Cranberries supply 100 I. U. vitamin C, well retained in storage, and 8.5 to 12 I. U. of vitamin A per ounce. Recipes are given for pot roast with cranberries and cranberry tapioca.

PUMPKIN PIE. Complete instructions for preparation of pumpkin pies. Formulae for the filling and crust stress importance of combining ingredients in a definite sequence. For example, eggs added last just before filling the shells, produce a lustrous appearance in the finished pie; 8, 9 and 10-inch size pie tin with straight sides and 15 holes in the bottom prevents soggy, tough crusts. The addition of corn syrup to the pie crust insures a crisp, golden brown crust.

HOLIDAY HINTS. New and unusual suggestions for holiday menus add a modern note to the proverbial roast turkey with stuffing and pumpkin pie. A few are hot buttered cauliflower surrounded by buttery circles of golden carrots; a bowl of slivered green beans with tender pearl onions served with almond butter sauce; and spiced canned fruit juices or nectars served hot or cold, or broiled grapefruit flavored with cinnamon to start the meal. Variations in the turkey dressing include the use of chopped celery, Chinese water chestnuts, nuts, mushrooms, and small pieces of sausage. This article is a great aid to the menu planner in the home or institution.

RESTAURANT SURVEY. Summary of study of the restaurant industry for the first 6 months of 1937 and 1938, based on data collected from 105 restaurants, and similar to the study made for the National Restaurant Association in 1932. The 1938 detailed report is available at $1.00 per copy from the National Restaurant Association. The cost of food for average restaurant was 46.5%, with 86% of the restaurants operating at a profit and keeping this cost below 40%; payroll averaged 25%; rent 5.9%; social security taxes 1.2%; depreciation and amortization 2.2% of sales. The comparison of the figures in the 1938 study with those of 1937 shows an interesting trend.

Buildings and Building Management

Vol. 38, November 1938

*Which painting contractor?—p. 19.
*Tested words that sell. E. Wheeler.—p. 22.
*Adequate heating records.—p. 27.
*Air-conditioning data. D. L. Sutherland.—p. 28.
*Air-conditioning costs. R. W. Evans.—p. 31.
*Noise is too expensive. H. W. Perry.—p. 34.

PAINTING CONTRACTS. The fourth article in a series on the fundamental economics of brands and grades of materials used and workmanship required in painting are interpreted as the basis for comparison of the different contractors' bids. Qualifications of bidding contractors must be weighed and abnormally low bids justified before considering bids. Correct legal wording of contracts must be insisted upon to avoid disputes and misunderstandings.

SALES PROMOTION. The third in the series of articles by the Tested Selling Institute on better sales presentation details how to get the buyer's immediate and favorable attention to the article or prospect under consideration. Advises presenting facts and figures in telegraphic statements, concise and descriptively vivid.

HEATING RECORDS. Illustrates forms for daily and monthly reports of heating costs as compiled by the chief engineer for the building manager. Forms are set up for easy interpretation and comparison.

AIR-CONDITIONING. Detailed, scientific analysis of elements involved in installing and operating any air-conditioning system. Careful explanation of variable factors affecting initial and upkeep costs of any system are given with 6 typical cost studies tabulated to illustrate the costs of different types of systems.

AIR-CONDITIONING. Studies based on survey of different types of installations in Minneapolis and St. Paul. Investment costs for a high quality year-round office system will run from $1.00–$2.00 per sq. ft. of floor area; owning and operating costs from 20¢–35¢ per sq. ft. of conditioned area per year on a 10-year amortization basis or approximately 20–25% per year of initial investment.

SOUND CONTROL. Scientific explanation of reflection, interference, and absorption of sound, together with a discussion of various manufactured accoustical materials giving application, treatment, and use of each to secure maximum "sound-control" of internal and external noises in large buildings.

Chain Store Age

Vol. 14, November 1938

*Record-keeping simplified for social security, wages and hours. F. E. Landau.—p. 20.
Equipment and directory.—p. 24.
*Putting appetite appeal in restaurant advertising. D. L. Toffenetti.—p. 26.
Making safety a game develops team-work. H. Martin.—p. 30.

RECORD-KEEPING. A complicated system of record-keeping for social security and wages and hours laws may be clarified by the use of individual record cards in 4 different colors: white, for employees subject to all rulings under both state and federal laws; salmon, for employees over 65 years of age, and those exempt from FAAB deductions and subject to unemployment insurance contributions; canary, for employees under 65 years of age, exempt from SUI and subject to FOAB contributions; blue, for employees whose earnings exceed $3000 a year and exempt under SUI but subject to Federal Unemployment Insurance and required to complete their FOAA contributions before the end of the year. The detailed forms used for this record are shown and evaluated in a readily understandable way.

APPETITE APPEAL. In restaurant advertising it is important to make people aware of the quality of food served. Price, quality, service and environment must be coordinated with interpretative advertisements if the advertising is to be successful.

Consumers' Guide

Vol. 5, October 10, 1938

*Philadelphia goes to market.—p. 3.
*Looking into food and drug futures.—p. 13.
*Your food supplies and costs.—p. 16.

PHILADELPHIA MARKETS. Inadequate returns for producers, high prices for consumers, traffic congestion, unnecessary rehandling, and uncoordinated, crowded, unsanitary display of produce makes Philadelphia market situation with its 5 wholesale markets, 2 street markets, 2 railroad produce terminals and the piers a real problem. Committee of experts suggest one centralized market financed either by private business or bonded capital under government supervision, with combined railroad, trucking, and shipping facilities to replace the 5 unrelated markets. Includes historical description of the growth of Philadelphia's market system.

FOOD AND DRUG LAWS. The year 1938 is an important milestone in the 50 years' march of food and drug events but what of the future for protective legislation for the consumer? North Dakota's three laws, the Food and Drug Act, the Cosmetic Act and the False and Misleading Advertising Law, show how future state laws may protect the consumer. Paints, fertilizers, animal feeds, petroleum products, insecticides, fungicides and flour have special laws to control the quality. Many provisions parallel new federal law, the distinctive difference in North Dakota's law being in the provision called "Analysis and Publication" which reads, "It shall be the duty of the State Food Commissioner to make or cause to be made analyses, examinations, and inspections . . . (he) shall have authority to publish the reports of such analyses, inspections and research for the information of the public." Under the new federal law, results of analyses are not made public unless brought into court as evidence.

FOOD SUPPLY. Prices of retail food dropped 2% from July to August. Meat and poultry supplies are likely to increase seasonally with hog slaughter considerably larger than last year. Most fresh vegetable supplies, except potatoes, are expected to be larger and all prices except for spinach were cheaper in mid-August than a year ago. Large crop of grapefruit expected; apples and grapes usually plentiful and lowest in price in October. Top grade eggs have increased in price in recent weeks. Retail bread prices appear to be on way down from July to August—average price of white bread declined 1/10 of a cent per pound. Reduction in New England during September amounted to 2 cents a 20-ounce loaf.

Hospitals

Vol. 12, November 1938

*Lighting.—p. 52.
*Modern dishwashing. E W. Atkerson.—p. 120.

LIGHTING. Over-brilliancy may give as bad results as under-illumination. Dark or dirty ceilings or globes may reduce light. Recommends good lamps and proper reflectors for efficiency.

MODERN DISHWASHING. Mechanical machines are recommended for even the smallest institutions. Steam sterilizers should be used especially for dishes from contagious wards. Glassware and silverware should be washed separately. Time and temperature charts for safe sterilization are given.

Hospital Management

Vol. 46, October 1938

*Know your gelatine dessert. A. E. Kremer.—p. 38.
*Culinary accessories.—p. 39.
Food costs decreased in August. Grinstead food price index.—p. 43.
*Electric counter fryer.—p. 50.

GELATINE DESSERTS. Outlines specifications for good gelatine desserts, giving recommendations for gelatine, sugar, flavor and color content. Price should be in relation to the quality of the dessert.

BUTTER DISPENSER. A butter dispenser has been perfected which eliminates the handling of butter pats and dispenses butter on chip with one stroke of the lever.

ELECTRIC COUNTER FRYER. Describes automatic fryer in which heating unit is immersed in the fat, giving a fast heat recovery.

Horwath and Horwath

Vol. 18, November 1938

Restaurant operating data.—p. 2.
*Podd talks at Northwestern "clinic".—p. 2.
Why rates should not be reduced. A. D. McKenzie.—p. 2.
*How they got away with it—tampering with account cards.—p. 3.
*Review of restaurant operating costs. G. O. Podd.—p. 3.
Food and beverage costs.—p. 7.

FRONT OFFICE. Explains and illustrates the three phases of front office work—selling rooms, guest service, and keeping of guest accounts.

THEFT. One can avoid dishonesty in substitute employees if the auditor takes time to file the cards each week and to compare the opening balance of the day with the closing balance of the previous day.

RESTAURANT COSTS REVIEW. Report for the first 6 months of 1938 on the data sent in by 105 restaurants shows an average profit of 4.4% of sales; cost of goods sold about 46.5%; salaries and wages, 26.7%; rent 5.9% which is 2.5% lower than in 1932; and .8 of 1% of sales for advertising.

Hotel Management

Vol. 34, November 1938

Measures for wines and spirits.—p. 31.
*Before going on duty—the efficient checkroom girl.—p. 34.
*How to select and train checkroom girls.—p. 35.
*Diesel solves problem of ice cost. J. Huckins.—p. 37.

CHECKROOM GIRL. This descriptive article is one of a series created for positions in hotels and restaurants. A complete set is valuable for employee training and to build morale.

SELECTION AND TRAINING. This chart supplements the poster with an explanation of the qualities necessary for the selection and training of an efficient checkroom girl.

ICE COST. A four-cylinder, 63 horsepower Diesel engine, with a v-belt drive operating an 8 x 8 twin cylinder ammonia compressor and running at 225 RPM at a head pressure of 255 pounds and suction pressure of 25 pounds, has paid for itself in 14 months. The ice output is 12 tons per 24 hours and the hotel sells the excess at a profit. The per ton cost of ice produced is 26¢ for power alone or a cost of $80 per month, in contrast to $450 per month and a demand charge for operating steam-powered ice manufacturing unit.

Journal of Home Economics

Vol. 30, November 1938

Federal legislation for aid to education. L. D. Russell.—p. 609.
Educating the consumer—a symposium.—p. 617.
*Food service in college residence halls. L. Williamson.—p. 633.
*New shrinkage rules for woven cotton goods. G. R. White.—p. 636.
*The new vitamin C status of college women as determined by urinary excretion. H. S. Mitchell, O. A. Merriam and E. L. Batchelder.—p. 645.

FOOD SERVICE. The opportunity and responsibility for the college dietitian in college food production has grown immensely according to Lillian Williamson of Baldwin-Wallace College.

The dietitian must educate the students to select nutritionally adequate meals and "sell" the dining hall to them. A prolonged breakfast period from 8–10:30; a 10 o'clock evening snack during finals; and care with special diets when prescribed by physicians, are recommended as aids in gaining good will of the student body. Among her student helpers she must inculcate loyalty and a respect for job standards and efficiency that assures smooth working routine as well as their respect and confidence.

SHRINKAGE RULES. Reviews the work of the American Standards Association in setting shrinkage standards for woven cotton goods. This resulted in the Federal Trade Commission's trade practice rules aimed to correct label misrepresentation.

VITAMIN C STATUS. A study was carried on at Massachusetts State College (1936–38) and Rhode Island State College (1937–38) to observe the daily ascorbic acid excretion of college women on their regular self-chosen diets; to note any change in urinary ascorbic acid at a later time when interest had been aroused in a higher vitamin C intake; to study the effects of massive doses of ascorbic acid when added freely to the chosen diets of certain students selected because of unusually high or low ascorbic acid secretion; and to correlate these results with the health of the students if possible. Conclusions recommend further study of dietary habits and physical stamina before more accurate estimate of human vitamin C requirement can be made.

Modern Hospital

Vol. 51, November 1938

*Pointers on preventing waste. M. Henenburg.—p. 50.
*Selecting wheat flour. M. J. Blish.—p. 90.
Birthday cakes for patients. B. Bohach.—p. 92.
*I lived through a strike. M. L. Ashman.—p. 94.
*Finger tip information.—p. 96.

PREVENTING WASTE. Control of expenditures in dietary department as a factor in hospital economy.

SELECTING WHEAT FLOUR. Types and grades of flour and how to select kinds best suited to hospital needs.

HOSPITAL EMPLOYEE STRIKE. Troubles arising from dissatisfied employees. How new working hours and schedules were established to remedy this.

FILING. Suggested system of filing for the dietitian's needs.

The Nation's Schools

Vol. 22, November 1938

*Today's kindergarten. W. S. Holmes.—p. 44.
*High school at Tulsa. W. A. Melton.—p. 48.
*Lunch in Tennessee. A. L. Carpenter.—p. 55.
*Food for thought.—p. 58.

MODERN KINDERGARTENS. Recognizing the principles of child psychology and child training, the architect must plan and design a kindergarten room that will aid in teaching health habits and desirable personality traits. Describes a modern kindergarten.

TULSA HIGH SCHOOL. The plan of the new Daniel Webster High School at Tulsa, Oklahoma, groups the departments for the convenience of the teaching staff and isolates those departments, including the home economics kitchens, that cause disturbances by noise. The foods laboratory is based on the unit kitchen arrangement and the clothing laboratories provide complete sewing, fitting, and laundry rooms. The home economics department conducts an unusual child development section.

LUNCH IN TENNESSEE. Economical measures in Hamilton County, Tennessee, demand careful supervision of school lunches. Describes the training of lunchroom managers, sources of food supply, policies of a typical school lunchroom in menu planning, nutritional provisions, purchasing, and record keeping.

COFFEE SHOP. At the coffee shop adjoining Hutchinson Commons at the University of Chicago, conducted as a campus institution rather than a tea room, the student is given an order slip as he enters and is required to present the slip to the cashier as he leaves whether he has ordered any food or not.

GOVERNMENT CHARTS. The government has issued 25 charts, valuable for the institution food buyer, on the analysis of federal and state standards for fresh fruits and vegetables and

legal standards for dairy products which may be obtained for 25¢ from the Superintendent of Documents, Washington, D. C.

Occupations

Vol. 17, November 1938

*The new national occupational information and guidance service. J. W. Studebaker.—p. 101.
*The vocational counselor and apprenticeship. W. F. Patterson.—p. 122.
*The home economist in business. C. G. Woodhouse.—p. 135.

VOCATIONAL GUIDANCE. The United States Office of Education is organizing a vocational guidance program to give information to students and adults on employment opportunities and on the qualifications required of applicants seeking positions. The service will follow three lines: first, the collection and dissemination of information about occupations; second, a permanent cumulative inventory of the individual who is to pursue one of these occupations; and third, the promotion throughout the nation of awareness of the need for occupational information and general guidance as an integral part of school programs.

APPRENTICESHIP. National and local trade apprenticeship committees are cooperating to standardize apprenticeship training and to form apprenticeship agreements for skilled trades occupations. To supplement this program, vocational counselors and teachers must help to direct and select students applying for apprenticeships. The method of a course in "trade finding experiences" as used by the Milwaukee Vocational School has been found one of the most effective solutions in eliminating undesirable students from apprentice training.

HOME ECONOMIST AND BUSINESS. A home economist, properly qualified professionally and personally, can readily enter many fields of work. Mrs. Woodhouse discusses the requirements of a good home economist and explains the many types of work that she may enter with above average remuneration and attainment of high professional success.

Personnel Journal

Vol. 17, November 1938

*Drop duds during probation. O. C. Short and E. F. Dow.—p. 168.
*Tall young and single. C. J. Thomsen.—p. 175.
*Wages and hours act. E. F. Andrews.—p. 183.

PROBATION PERIOD. With probation periods so universal yet so unreasonable, this article recommends a probation program upon which to base a sound law, flexible for varying employment problems and demanding cooperation between civil service commissions and the company's administrative officers.

APPLICATION REQUIREMENTS. Motion and time studies prove invaluable in determining the average hourly wages for piece rate jobs. Outlines procedures for obtaining scores on employee abilities and requisites, through using these motion and time studies to improve application blanks and make it possible to judge the fitness of an applicant for a given job.

WAGES AND HOURS. This article interprets and clarifies the Wages and Hours Act, part of the Fair Labor Standards Act of 1938. Examples and sample forms are provided to explain each point.

Restaurant Management

Vol. 43, November 1938

*Food service in the air. J. O. Dahl.—p. 16.
Wheels on a cafeteria. J. C. Toldtman.—p. 26.
*Ewart presents cafeteria beauty.—p. 29.
Modernization triples volume. J. E. Tufft.—p. 48.
*Microbe hunters in Washington.—p. 50.
Ideas of the month.—p. 51.
*Sandwich manual. B. D. Evans.—p. 54.

AIR FOOD SERVICE. Following recommendations for organized food service, United Air Lines now serve 500,000 meals a year, at a cost of $200,000, in 21 passenger planes. Menus of the three classes of meals ("A", "B", "C") or dinner, lunch and breakfast are made in advance by Mr. Magarrell and Miss Ada Williams, the dietitian of the Chicago headquarters food staff. The food is served from 14 points on the routes and commissaries are located in Chicago, Cheyenne, Portland, and Oakland. The food cost is determined on the basis of passenger miles flown, the rate being .00139. Special insulated containers are used for the foods which are served on paper or fabricated plates. Pictures of the food units, floor plans, and examples of menus are given.

MODERN CAFETERIA. First of a series of articles dealing with the Ewart Cafeteria system started

9 years ago in Richmond, Virginia, with a one-counter, 123-seat capacity and 23-foot frontage. Branches are now in Washington, Norfolk and Philadelphia. The new building on the "Montecello" design contains several dining rooms, serves 850 persons at one sitting and 3000 meals daily, and employs 100 people. Advertising is an important feature in this success.

MICROBE HUNTERS. Three college trained experts employed by the Washington Restaurant Association, in cooperation with the Public Health Service and food inspection bureau of the local health department, have achieved much in the restaurant clean-up plan, bringing bacterial count on dishes, glass and silver, from 530,000 down to 500 in the past year. Swabs are made from glass rims, water is tested in which silverware has been washed and temperature of dish water and rinse water is tested. Laboratory chemists use these specimens to determine the bacterial count. Restaurant owners are warned three times before the case is taken to court.

SANDWICHES. Cost table consisting of 67 standard sandwiches is presented, including the portion sizes of ingredients, the raw and prepared cost, cost per portion, average cost of bread, butter and other ingredients, the total cost, sale price, profit, percentage profit and suggested relishes, all of which helps restaurant owners to secure profits in sandwiches. Food costs were obtained in the East and Middlewest.

School Life

Vol. 24, November 1938

*College dormitories.—p. 41.
*Promoting school broadcasts. G. Studebaker.—p. 52.

COLLEGE DORMITORIES. An estimated 30% of all college students of the United States live in dormitories or residence halls of three types. First, is the modern dormitory, furnishing clean and sanitary rooms for comfort and convenience of study; second, are the "barracks", which offer small, inexpensive, but crowded rooms; and third, is the cooperative cottage, managed and operated by a group of students. Recent studies reveal that since 1874, $54,100,000 has been spent by 94 universities and colleges for construction of student living quarters.

SCHOOL BROADCASTS. Broadcasting by high school and college students has developed greatly in the last 2 years due to the organization of the Educational Radio Script Exchange. Gives examples of the follow-up reports of some 3000 broadcasts by educational groups from 230 radio stations in 43 states.

The Science Leaflet

Vol. 12, October 1938

*Nitrogen.—p. 2.
*Fireproof paint of new composition developed.—p. 5.
Machines. E. P. Little.—p. 11.
*Safeguarding the health of Pennsylvania's children. E. McB. Dexter.—p. 24.
*Nutrient solution culture of vegetables. W. B. Mack.—p. 34.

Vol. 12, November 1938

*Air-conditioned cars and homes loom as future possibilities. T. Larson.—p. 34.
*Safeguarding the health of Pennsylvania children. E. McB. Dexter.—p. 37.
*Meat to eat. L. Morrill.—p. 5.
Quality in foods and feeds. H. A. Wallace.—p. 30.

NITROGEN. Three methods used to produce artificially fixed nitrogen include the arc process now almost obsolete because of high power consumption; the cyanamide process, second in power consumption; the direct synthetic ammonia process, the cheapest and most widely used method. World food production has been increased through modern increase in nitrogen compounds available for agricultural fertilizers.

FIREPROOF PAINT. A new type of fire resistant paint reportedly composed of nitrogen salts and a synthetic resin has been developed in Germany to protect wood from fire. As the flame contacts the painted wood surface an insulating foam crust develops, effectively protecting the wood from fire.

SAFEGUARDING HEALTH. A description of work being done in Pennsylvania to safeguard the health of children and the methods employed to provide necessary health treatment and care for children of indigent families.

NUTRIENT CULTURE OF VEGETABLES. Commercial production of crop plants in nutrient-solution cultures is a recent development. Three methods are used to grow plants without soil.

AIR-CONDITIONING. Due to the invention of streamlined cars, planes, and trains which are self-enclosed there is need for air-conditioning which provides ideal conditions of humidity and temperature. Changes will have to be made in architectural design of modern homes if air-conditioning is employed. Great expense is incurred at present in installing a plant, but future developments and refinements in available equipment and progress in architectural planning may reduce cost.

SAFEGUARDING CHILD HEALTH. Health authorities of Pennsylvania hope to save the lives of many children suffering from pneumonia by making pneumonia serums available in distributing centers throughout the state. New acts have been approved which will aid the health of children as follows: care and treatment of babies suffering from ophthalmia neonatorum; treatment of preschool children suffering from impaired hearing; research in nutrition; and study of housing conditions and needs in order to eliminate slums.

MEAT. The meat industry in 1935, consisting of 1223 firms and 150,000 employees, and producing 140 by-products and 15,572,000,000 pounds of meat (6,759,000,000 pounds of beef, 1,081,000,000 pounds of veal, 846,000,000 pounds of lamb and mutton and 6,886,000,000 pounds of pork), was considered to be the second largest industry in the world. On January 1, 1938, Illinois, Iowa, New York, Minnesota, Kansas, California, Nebraska, Missouri and Pennsylvania were the nine leading states producing a large part of the 65,930,000 head of cattle and calves, 44,418,000 head of swine, and 452,918,000 head of sheep and lamb.

NEWS NOTES

The American Dietetic Association, Inspection of Courses. The regular biennial inspection of courses for approval by the American Dietetic Association will start in January this year. Adeline Wood, inspector, is planning to start her itinerary in the north central states and work toward the northeast. Later in the spring she will travel south and west. Each director will be notified well in advance in order that satisfactory arrangements may be made for Miss Wood's visit.

The problem of local group participation in inspection has been given careful consideration by the national officers and House of Delegates. Various opinions were expressed but no definite decision was reached. The Professional Education Section and the Approval Committee, therefore recommend, that for this year, the American Dietetic Association follow the precedent set by several other professional organizations; namely, that no local committees will be appointed to accompany the inspector on her visits to the various institutions. Having given such a procedure a fair trial, there will be opportunity for the membership to express its opinion further next year through the House of Delegates.

Graduate Course for Hospital Dietitians. Gertrude I. Thomas, director of the Department of Nutrition, University of Minnesota Hospitals, states that the Center for Continuation Study of the University of Minnesota has announced a three-day postgraduate course for hospital dietitians to be held February 13–15, 1939. The program will consist of lectures, demonstrations and round table discussions. The meetings will be held in the Center for Continuation Study Building which will also house the students. There are complete living accommodations for 78 persons. Beula Becker Marble of the Huntington Memorial Hospital, Boston, president-elect of the American Dietetic Association, will be the guest speaker. The general plan will include one day of lectures and round table discussion on "Normal Nutrition", one on "Diet Therapy", and one day on "Features of Administration"; and there will be two evening dinner meetings.

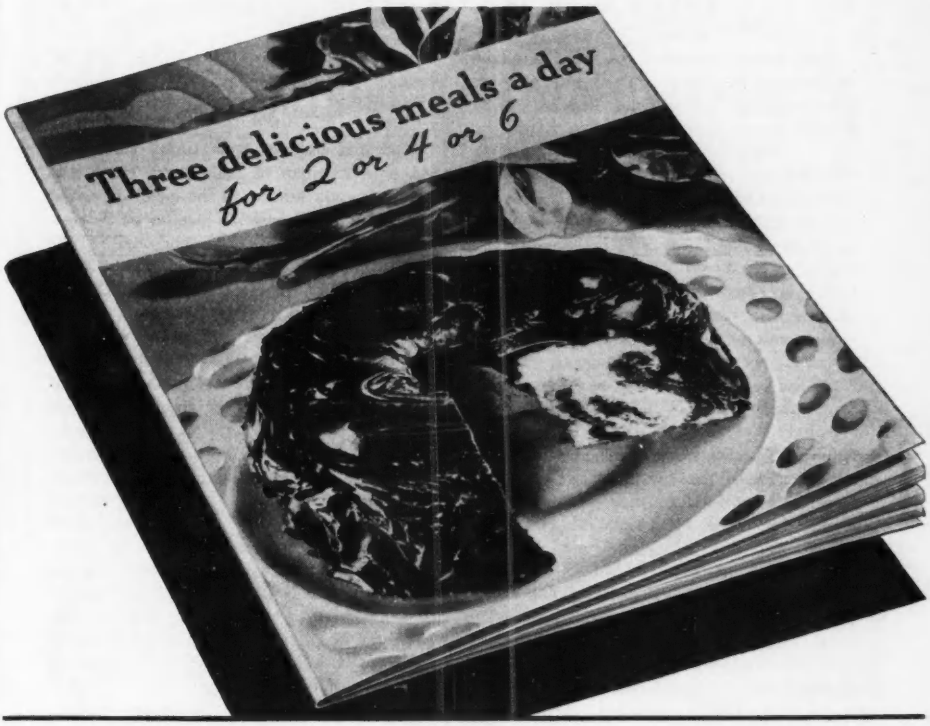
Martha Koehne is the author of a paper on "Relation of Diet to Oral Health" appearing in the *Journal of the American Dental Association* for November 1938. Dr. Koehne presented a paper before the annual meeting of the Greater New York Dental Association on December 8.

Gertrude Spitz. Miss Spitz is the author of an article on "Nutrition of First-Grade Children" appearing in the journal, *Understanding the Child*. Miss Spitz, who is a nutritionist for the Norwood School Project, has written an interesting article detailing the work of the nutritionist in a mental hygiene program of an elementary school. The feeding situation, so important with children, requires a clear appreciation of the psychological factors involved, in addition to the physiological ones.

A Course in Nutrition and Therapeutics for the General Practitioner. Columbia University, through the New York Post-Graduate Medical School, held a special course in nutrition and therapeutics, December 12–16, 1938, which covered a discussion of diets and other therapeutic procedures in metabolic disorders (including diabetes and nephritis), and diseases of the digestive system, the anemias, heart disease, renal calculus, undernutrition and the deficiency diseases. The modern concepts of nutrition in various disease conditions were fully discussed.

Testimonial Dinner to Casimar Funk, Hotel Pierre, New York City, November 10, 1938. A group of physicians and nutrition specialists arranged this dinner honoring Dr. Funk, whose contributions to nutritional knowledge began with his first attempts at isolating vitamin B_1 in 1911. The dinner menu carried a brief summary of Dr. Funk's contributions which have been many and notable during the past 30 years.

W. K. Kellogg Foundation, Battle Creek. The foundation plans to increase its budget for health during the fiscal year 1938–39, almost doubling its allocation for the year 1937–38. The capital grants are divided into four classes: schools, hospitals, camps and youth buildings, including the University of Michigan graduate dental schools and rural rehabilitation for 600 schools. The foundation also sponsors health



"THREE Delicious Meals a Day for 2 or 4 or 6" is a carefully selected collection of tested recipes — illustrated with photographs and made more helpful with explanatory notes and balanced menus—which demonstrates how appetizing and delicious food can be made more wholesome, and, at the same time, cost less with Irradiated Pet Milk.

Some of the recipes show how an extra amount of the much-needed "quart of milk a day" can be included in the diet. Others illustrate how less butter and fewer eggs can be used by following Pet Milk recipes and using Irradiated Pet Milk. Several of them demonstrate that Pet Milk can be most successfully used in place of cream and whipping cream.

All food made with Pet Milk contains extra vitamin D because all Pet Milk is irradiated. Irradiated Pet Milk costs less generally than ordinary milk —much less than cream.

PET MILK COMPANY, 1450a Arcade Building, St. Louis, Missouri

Please send me, free of charge,
"Three Delicious Meals a Day for 2 or 4 or 6"

*Teaching*_____ *Grade*_____

*Name*_____ *Address*_____

*City*_____ *State*_____

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work in seven counties of the state, supplying the directors in charge of the health program. The counties are Calhoun, Allegan, Barry, Branch, Eaton, Hillsdale and Van Buren.

Connecticut Dietetic Association held its annual meeting at the Faculty Club in New Haven on November 10. Helen S. Mitchell spoke on "Recent Advances in Nutrition Research". The home economics group of New Haven accepted an invitation to attend the meeting and contributed to the professional interest and sociability. Plans were discussed for an all-day meeting in the spring.

Officers for 1938–1939 are as follows: president, Marjorie Burr, William Wirt Winchester Hospital, West Haven; vice-president, Helen Hubbell, Yale School of Nursing, New Haven; secretary, Alice S. Manek, Norwalk General Hospital, Norwalk, and treasurer, Mrs. Blanche Reast, Lawrence Memorial Hospital, New London.

District of Columbia Dietetic Association elected Helen Burns, chief dietitian of Walter Reed General Hospital, as their new president. The vice-president is Ann Sullivan Hagen, Chestnut Farms-Chevy Chase Dairy; secretary, Lennice A. Sartell, assistant dietitian, St. Elizabeth's Hospital; and treasurer, Alice Latson, chief dietitian, Children's Hospital. Eva Marks, retiring president, and chief dietitian at Gallinger Hospital, is chairman of the Nominating Committee.

The new chief dietitian at Glenn Dale Sanatorium is Ruth Cornman, formerly with the Veterans Administration.

Jean Green, former food editor of the Washington *Post*, was married to Dr. Frank Green and they are living in Rushville, Indiana.

Ann Meyers, chief dietitian at Emergency Hospital, has announced that Irma Boehme, graduate of the University of Minnesota and for six years dietitian at Oak Terrace Sanatorium, Minnesota, is her new assistant.

Grace Jackson, recently of the Emergency Hospital Dietetic Department, is now dietitian at Columbia Hospital in Pittsburgh, Pennsylvania.

The annual card party held in October was a great success, both socially and financially.

The November meeting was held in the Sternberg Auditorium, Army Medical Center. Captain Russell McNellis, V.C., U.S.A., was the speaker of the evening and his subject, "Trichinosis".

Maryland Dietetic Association. Anne Merkle, chief dietitian of the Church Home and Infirmary, was hostess to the members of the association at the monthly meeting on November 14. The meeting was sponsored by the Professional Education Committee, Marie Mount, head of the Home Economics Department at the University of Maryland, College Park, acting as chairman. Speakers were Miss Mount, who discussed "The Qualifications and Needs of Dietitians Today"; Madame Pearl V. Metzelthin, guest speaker from the Greater New York Dietetic Association, who spoke on "The Dietitian in Altitude", discussing her experiences as dietitian in the airway services; and Clara Belle Welch, of the home economics staff of the University of Maryland, whose subject was "Training While on the Job". Miss Welch offered a very worthwhile bibliography of available sources of reading material for all dietitians. In closing her meeting, Miss Mount invited all who were interested in taking advanced work in nutrition at the university to see her regarding available courses.

Reports covering the Milwaukee meeting were given by Alma Bering, president and state delegate, Alice Jones, Helen Baughman, Betty Olsen, and Ruth Aldrich. Following the business meeting, the members enjoyed a lovely exhibit of holiday foods, favors, and decorations, which were displayed by the various association members. Delicious refreshments were served by Miss Merkle and her staff.

Ruth Hoover, program chairman, announced that the December 12 meeting would be held at the Johns Hopkins Hospital, with Kathleen Lewis presiding.

All new state members were guests of the association at a welcoming tea held Sunday, December 4, at the Goucher College Alumnae Lodge. Emma Childs, dietitian at Goucher College, presided as hostess. The tea was sponsored by the Hospitality Committee, Marguerite Betts, chairman.

Alma Bering was invited to speak to the members of the Home Economics Club at the University of Delaware College for Women on December 9.

Katherine Gerlough has been transferred

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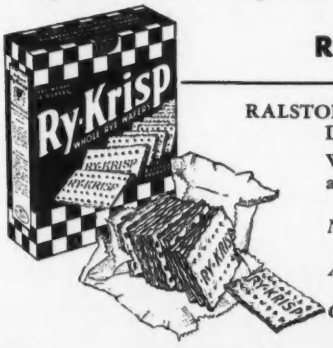

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from the Gwynns Falls Junior High School Cafeteria to the Garrison Junior High School Cafeteria, replacing Mrs. Gundersdorf, who is on a leave of absence. Leona Seymour, formerly of the Women's Hospital, has replaced Miss Gerlough at the Gwynns Falls School.

Mrs. Martha Squires Baltz, supervisor of Public School Cafeterias in Baltimore, attended the meeting of the Conference of Food Service Directors in Rochester, New York.

Arrangements are being made for a series of lectures on nutrition by Ernestine Becker of the Johns Hopkins School of Hygiene and Public Health.

Alma Bering and Josephine Anderson attended the New Jersey Dietetic Association annual meeting on November 17 at the College for Women at New Brunswick. They report a very excellent meeting.

A program of interesting and entertaining events covering recitals, lectures, exhibits, and concerts which will be given in Baltimore this season was outlined and distributed to members of the association at the November meeting.

Helen Nelson, who completed the postgraduate course at Johns Hopkins Hospital on November 1, has joined the staff as ward dietitian.

Sarah Tweed, a graduate of Florida State College, has been appointed assistant administrative dietitian at the Johns Hopkins Hospital.

Michigan Dietetic Association. Eighty members and friends of the association attended the fall meeting in Ann Arbor on November 18. Both the morning and afternoon meetings were held in the new Horace Rockham Graduate School Building.

The general program in the morning included three talks. The first, by Dr. Daniel Melnick, of the Department of Medicine, University of Michigan Hospital, was entitled "The Influence of Diet upon the Regeneration of Serum Protein". His work, which he had conducted at Yale University, indicated that patients with nephritis needed a high protein diet to raise the low nitrogen content of their blood serum to normal values. In the second talk, Grace E. Smith, vice-president of the National Restaurant Association and president of Grace E. Smith Company of Toledo, Ohio, gave some very useful suggestions concerning "Everyday Problems in Food Preparation and Service". The last talk at the morning session was entitled "You and Your Community". In this talk, Lelia McGuire, of Merrill-Palmer School in Detroit, challenged each dietitian to use her influence to improve the nutrition status in her own community. Miss McGuire thoroughly realizes the need for such improvement because she organized the nutrition work in the welfare organization in Michigan and is still an advisor to this organization.

At the luncheon, held in the Michigan League, Dr. Samuel Altshuler of Detroit told about the work of the Detroit Diabetic Association. The aim of this organization is not only to help the diabetic patient directly, but also to educate the doctors, the nurses and the general public as to the care of diabetic patients. Mable MacLachlan, director, Department of Dietetics and Housekeeping, University of Michigan Hospital, discussed "Highlights of the Milwaukee Meeting" and Frances McKinnon, chairman of the American Dietetic Association, Diet Therapy Section, brought greetings from the national association.

In the afternoon, Dr. Arthur H. Smith, professor of biochemistry at Wayne University, Detroit, discussed "Recent Contributions in Nutrition and their Significance in Practical Dietetics". Following this there were several short talks which included many practical and useful suggestions. The topics were as follows: "Student Training Course for School Lunchroom Managers", Winning S. Pendergast, supervisor, school lunchrooms, Detroit; "The Pay Cafeteria", Mary M. Harrington, director of dietetics, Harper Hospital, Detroit; "State Board Examinations in Nursing Education", LaVonne Rector, dietitian, University of Michigan Hospital; "Dish Breakage and Loss of Silver", Jean Carruthers, dietitian, Helen Newberry Residence and Betsy Barbour House, Ann Arbor.

The day's program ended with a tea at Mosher Jordan Halls. Kathleen Hamm and her staff were hostesses. Miss Hamm was program chairman and made all arrangements for the meeting.

New Jersey Dietetic Association. At the recent meeting of the New Jersey Dietetic Association, the program for which appeared in this JOURNAL for December, over 75 were in attendance. The following officers were elected:

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president-elect, Elizabeth Rupert, Hackensack Hospital, Hackensack; vice-president, Katherine Booth, Cooper Hospital, Camden; and secretary, Margaret McCoy, Middlesex County Extension Service, New Brunswick.

Greater New York Dietetic Association. On November 14 the association met at the Red Cross Building with Dr. Helen S. Mitchell, director of Home Economics Research Massachusetts Agricultural College, speaking on "Recent Research in Nutrition". At the December 5 meeting, Mr. N. Molnar, chemist, spoke on "The Dietitian looks at the Food and Drug Act". An address by Mr. Lucius Boomer, president of the Waldorf-Astoria Hotel, followed.

Philadelphia Dietetic Association held a community education program on November 8. Dorothy Ebbitt, home economist, Campbell Soup Company, who presented "Food Education Through Advertising", graphically contrasted the changes in display. "Food Education Through Demonstrations" was discussed by Mrs. Marion G. Kemp, home economist, Philadelphia Electric Company, who prepared a dinner to illustrate her talk. Elsie Carol, director of home economics, WCAU Broadcasting Company, spoke on "Food Education Over the Radio". Guests of the association were the Philadelphia Home Economics Association and home economics students from colleges in the city and vicinity.

Field trips were taken by members on November 22 to the U. S. Naval Hospital where Mr. F. O. Ball, chief pharmacist, was host, and to the General Baking Company plant where Mrs. Susan G. Byrd, Consumers Service Department, was hostess.

Anna DePlanter Bowes presented the findings of dietary studies on patients being carried on at the University of Pennsylvania Dental Clinic at the American Association for the Advancement of Science, Richmond, December 28.

On December 14 the association met jointly with the Philadelphia County Medical Society and the Philadelphia Metabolic Association. Joseph T. Beardwood, M.D., president, The Philadelphia Metabolic Association, presided. Catherine Roess, assistant dietitian, Jefferson Hospital, discussed "Interpretation of Diabetic Diet Prescriptions". The principal speaker of the evening was Elliott P. Joslin, M.D., clinical professor of medicine, Harvard Medical School, and his topic, "Diabetes".

Texas State Dietetic Association. The November issue of the *Bulletin* of the state association marked the beginning of its third year of publication. It acts as an excellent connecting link for members in the wide area of Texas.

The Dallas Dietetic Association held its regular meeting on November 15 at Stoneleigh Court. Plans for the yearly program were discussed. Many expressed a desire for more information concerning methods of accounting and buying used in the various Dallas organizations. The next meeting will be devoted to a round table discussion of these subjects. Each member is being asked to bring a favorite popular menu with recipes, and forms available for cost accounting and food specifications.

Dr. Florence Scoular, director of the Home Economics Department of the North Texas State Teachers College at Denton, recently became a member of the Dallas association. Other new members are: Lucille Tarrance, Jo Beth Arledge, Virginia Bess Jackson, and Barbara Burnett, all associated with the Dallas Public School Lunchrooms.

The South Texas Dietetic Association welcomed Tony Bracher back from Williamsburg, Va., to its Houston ranks. She is now dietitian of the Houston Country Club.

The Central Texas Association is making plans for the state dietetic meeting to be held in Austin next March. Rosalie Godfrey is program chairman.

Mozelle Craddock of the Northwest Texas group has been appointed program chairman for the Institution Management Division of the American Home Economics Association meeting in San Antonio next June.

News from our Advertisers and Exhibitors. *Mead Johnson and Company* again call attention to the need for added vitamin D in the diet of babies and children during the winter season. Winter sunshine in most parts of the country averages 10 to 15 per cent less than summer sunshine and the quality is inferior due to the shorter distance of the sun from the earth, altering the angle of the sun's rays. Clothing also prevents sufficient contact with the sun's rays. They add further, as Dr. Alfred F. Hess

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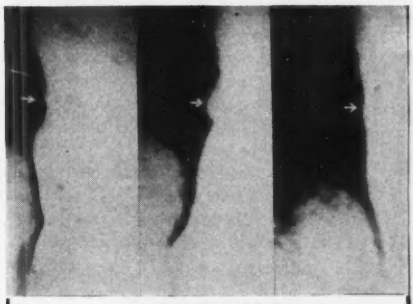
A simple formula for the preparation of concentrated Knox Gelatine feedings, useful in peptic ulcer is, stir quickly one envelope (approximately 8 grams) of Knox Gelatine in ¾ of a glassful of drinking water and have patient drink quickly before it "sets" or gets lumpy.



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*Windwer and Matzner, *Am. Jl. Dig. Dis.*

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Mary Lee Taylor of the *Pet Milk Company*, St. Louis, has prepared an attractive booklet entitled "Food for a Family of 2 or 4 or 6" suitable for inclusion in a loose leaf collection of recipes. Other interesting material helpful in teaching, and to the manager of the dietary department, including quantity recipes, are available from this company.

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*Dole Pineapple "Gems" from Hawaii are spoon-sized cubes of ripe pineapple cut from the tenderest part of the fruit.

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WHO'S WHO IN THIS ISSUE

Anton J. Carlson, noted physiologist, has been professor in the Department of Physiology of the University of Chicago since 1919. He is a fellow of the American Association for the Advancement of Science, a past president of the American Physiological Society, a member of the Society for Experimental Biology and Medicine and of the National Academy of Science. Every dietitian is familiar with his text, *Control of Hunger in Health and Disease.* He has been a frequent contributor to American and German journals of physiology and his researches on the heart and circulation, the heart nerves, the saliva and saliva secretions, the thyroid, parathyroids and the pancreas, and the distribution of immune bodies in the body fluids, as well as those on the nature of hunger, gastric secretion and metabolism, have given him a distinguished place among scientists. Throughout his career, Dr. Carlson, "physically rugged and fearless, has insisted on taking his turn on the table." Many of his most difficult and occasionally dangerous experiments have been done with himself as the subject. His first piece of research under Jacques Loeb resulted in a new chapter in the physiology of the heart beat. More recently his researches have been concerned with the endocrines.

C. A. Elvehjem received his Ph.D. degree at the University of Wisconsin in 1927. His interest began in the field of agricultural chemistry. He was formerly an assistant in this subject at the University of Wisconsin, and later an instructor and assistant professor. In 1929–30 he studied under Sir Frederick Gowland Hopkins and Professor D. Keilin at the University of Cambridge under the National Research Council Fellowship. Since 1936 he has been professor of biochemistry at the University of Wisconsin. His interests have mainly been concerned with studies on mineral elements and vitamins, some of which have been on the essential nature of copper, manganese, zinc and cobalt in nutrition, the availability of iron, the principles of the vitamin B complex and a new essential factor found in young green succulent plants. In 1937 Dr. Elvehjem and his associates were the first to announce that nicotinic acid will prevent or cure blacktongue in dogs. Dr. Elvehjem is a member of the American Association for the Advancement of Science, American Chemical Society, Society of Biological Chemists, and the Institute of Nutrition.

Francis D. Murphy, M.D. is a specialist in internal medicine. He has been clinical director of the Milwaukee County Hospitals since 1924 and head of the Department of Medicine at Marquette University since 1928. As an authority on Bright's disease, Dr. Murphy's work was recognized by the American Medical Association from whom he received the Certificate of Honor in 1933. He is a fellow of the American College of Physicians, and member of the American Therapeutic Society and the American Heart Association. Dr. Murphy is the author of *Dr. Murphy's Bedside Clinics* and of the section on Bright's disease in Tice's *Practice of Medicine.* He is a member of the editorial board of the *American Journal of Digestive Diseases.*

K. K. Sherwood, M.D. is on the staff of the King County Hospital System and is a faculty member of the University of Washington School of Nursing. **Marian E. Thomson** received her B.S. degree in institution management from the University of Washington in 1937 and completed her student dietitian training in the Seattle course in August 1938. While studying at King County Hospital she completed the diet studies in connection with the paper appearing in this issue. At present she is teaching nutrition in the Department of Home Economics at the University of Washington.

Osee Hughes was noted in this section in connection with her paper which appeared in this JOURNAL for November 1936. **Leora Campbell** was a graduate student majoring in food and nutrition at the time the study reported in this JOURNAL was done. She holds the master's degree from Ohio State University.